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ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding that they are contributed exclusively to THE LARYNGOSCOPE.)

AN ABUNDANT MEATAL FLAP FOR THE RADICAL OPERATION.*

BY FRED WHITING, M. D., NEW YORK.

The closing step in the operative technique of the radical mastoid operation, demands in every instance the construction and transplantation of a flap from the fibro-cartilaginous meatus. Great ingenuity has been expended and praiseworthy ambition displayed in the endeavor so to employ the scanty material at hand as to produce a flap which will insure an ample and permanent meatus, while but slight consideration has been devoted to the equally important step of providing a flap of sufficient dimensions to offer valuable assistance in covering the denuded bone surface when once it has been secured in position.

Numerous meatal flaps bearing the names of distinguished aural surgeons have during recent years received the sanction and endorsement of the profession, and each in turn has enjoyed a more or less extended vogue. At the present time, however, those most commonly employed and most uniformly adapted to the requirements of the radical operation, are those for which Koerner, Panse and Ballance stand as sponsors. These flaps are easy of construction, are simple of application, and can usually be made from any meatus unless it has been extensively destroyed or distorted, as a consequence of chronic ear suppuration, or of some prolonged proliferative inflammation of the meatus.

Against the methods of procedure employed in the flaps just mentioned, the objection may justly be raised that they are concerned only with the production and maintenance of a meatus sufficiently wide to offer an easy avenue for the inspection and treatment of

*Read before the American Otological Society, Boston, Mass., May, 1909.

the operative bone cavity after the mastoid wound has been closed. They do not offer an abundant flap for purposes of transplantation, and at least one of them, from its encroachment upon the area of the concha, is frequently associated with a marked deformity of the auricle. A meatal flap can be so constructed as to offer all the advantages of a graft with a pedicle, and in so far as its restricted size permits of its employment, it possesses obvious advantages over

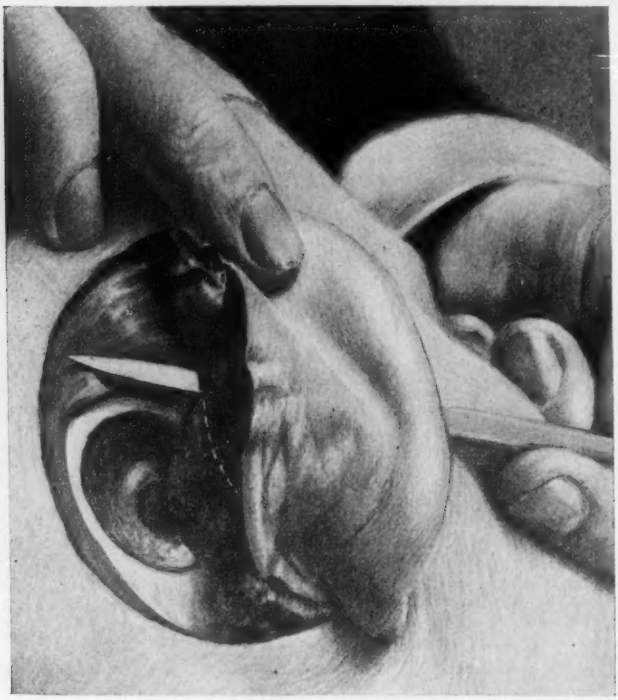

Plate I.

a Thiersch, or any other variety of graft. A flap which has been constructed in such a manner as to employ to the fullest extent the scanty tissues which the fibro-cartilaginous meatus affords, should aim to accomplish at least two important objects. It should secure an amply wide meatal orifice through which an unobstructed view of the interior of the bone cavity may be obtained and through which the post operative dressing may be conveniently introduced and distributed. It should provide in addition, as abundant a supply of

integument as possible for the purposes of covering and nourishing the bone exposed during the progress of the operation. These requirements it should fulfill, with the production of the minimum amount of deformity. A flap which I have employed in all radical operations performed by me during the past seven years meets, in my judgment, the above indications in a very satisfactory manner. The construction of this flap is not difficult, although not as simple

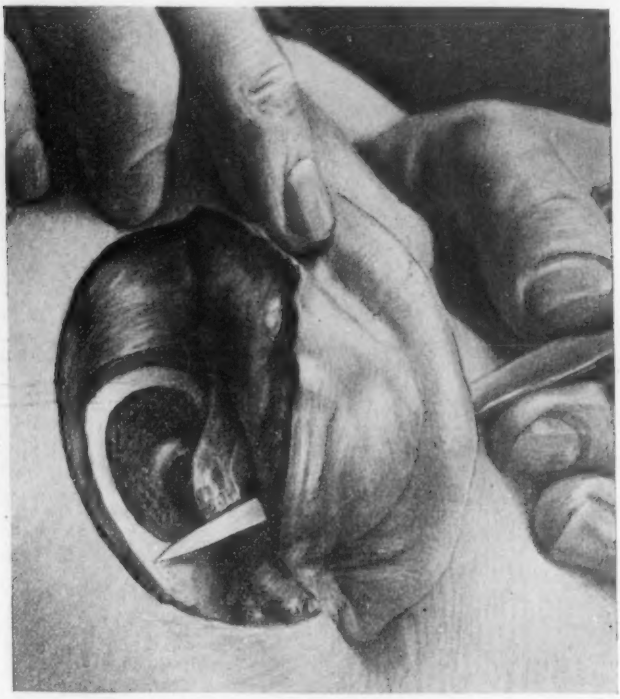

Plate II.

in procedure as the Koerner or Panse flaps, but the additional difficulties to be overcome in its production are compensated for by the advantages obtained in the increased area of bone which can be covered, and in the absence of deformity. The method of construction of the flap is as follows:

The helix of the auricle is firmly grasped between the thumb and finger and drawn upward, forward, and somewhat away from the skull. A sharp-pointed narrow-bladed bistoury is then used

with which to transfix the auricle at the margin of the meatus in the vertical meridian above, just where the meatus widens out into the concha. When the transfixion is completed, the knife, without being withdrawn from the wound, is made to follow the periphery of the margin of the meatus around its posterior half to the vertical meridian below in the form of a semicircular or crescent-shaped incision.

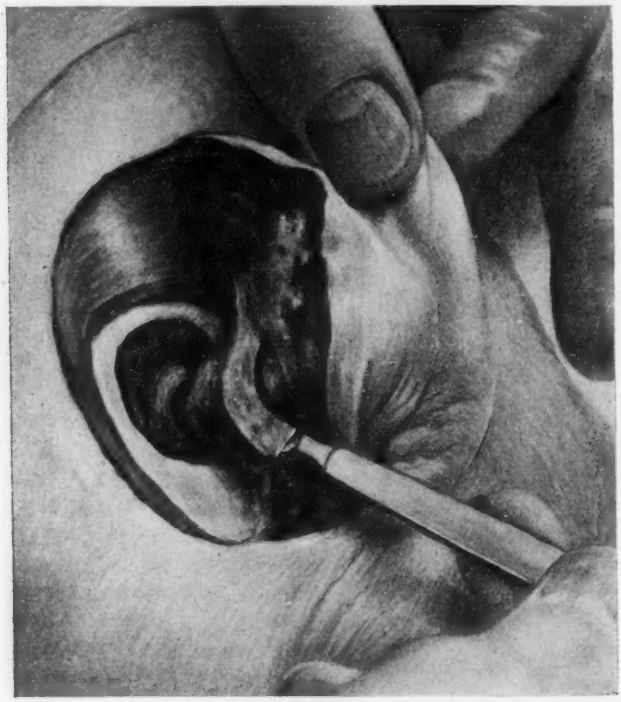

Plate III.

Caution should be observed when making this incision that the handle of the knife be held as close to the face of the patient as convenience of manipulation will permit, for the more nearly the handle of the knife is kept horizontal with the face the more deeply will the blade traverse the tissue and the more abundant will be the resulting flap. The operator's attention is also called to the fact that the tragus should be protected, lest if it be prominent—as it sometimes is—it may be wounded by the heel of the knife. Having

completed the incision around the posterior border of the meatus, the next step in the construction of the flap is to make a second incision at right angles to the first, extending the entire length of the fibro-cartilaginous meatus, along the floor. This incision is most easily and accurately completed by cutting from within the meatus outward, as indicated in plate 3. The blade of the knife is inserted into the meatus through the incision first made and at its lower

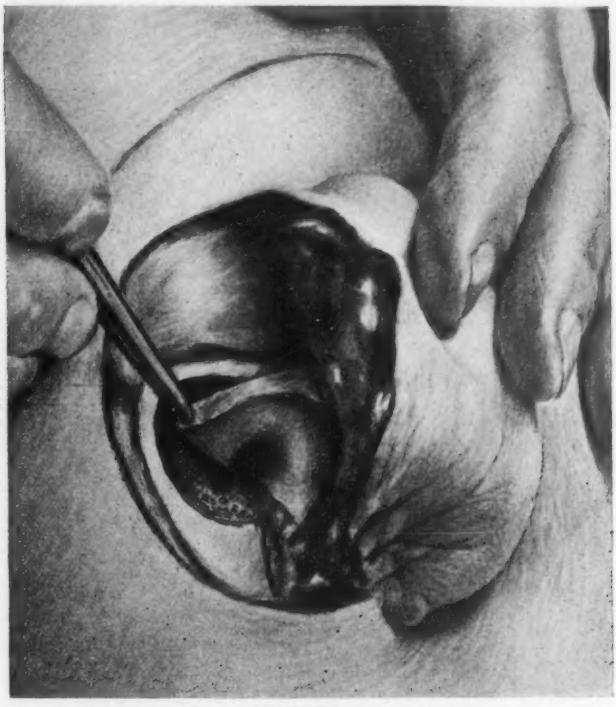

Plate IV.

angle; thence the cut extends directly downward, dividing the cartilaginous meatus throughout its entire length, and freeing the flap so that it may be drawn upward and backward into position for stitching. Before the flap is stitched in its permanent place, however, it should be divested of all unduly thick and redundant tissue, and of such fragments of cartilage as would in any wise interfere with its pliability and accurate adjustment. Having been thus prepared, the flap is drawn upward and backward, and applied in such a manner as to most advantageously cover the supero-posterior

portion of the bone cavity, with the contour of which it naturally adapts itself. A single stitch of catgut carried through its upper margin and attached to the border of the temporal fascia just below the temporal ridge, serves as an efficient support to the flap, while the gauze packing with which the wound is dressed, affords the necessary pressure to bring the adhering surface into firm contact with the bony wall which it is designed to cover.

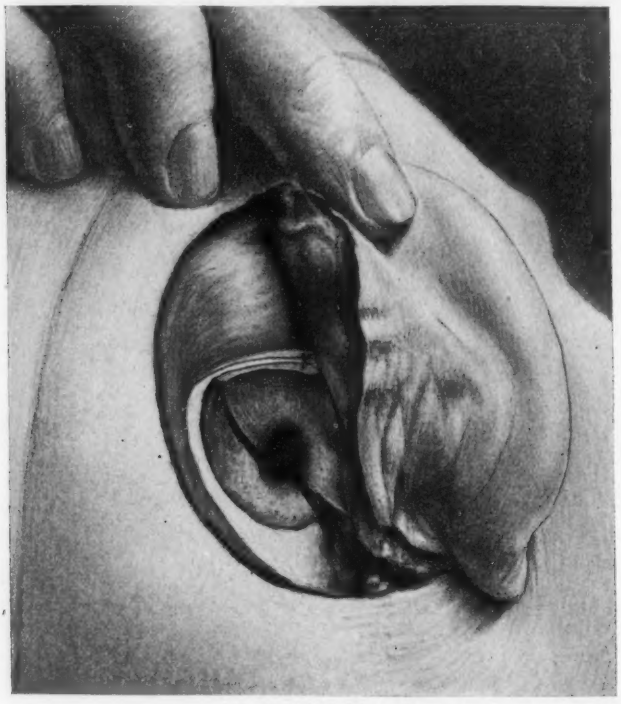

Plate V.

After having employed this flap in a large number of cases I am well satisfied with it, for it provides the largest possible amount of tissue which the auricle can supply, corresponding in point of fact to a graft with a pedicle. When proper care is observed in its construction, it affords an adequate and commodious meatal opening through which complete inspection of the operative cavity is readily obtained, and furthermore, it does not inflict upon the patient a needless and conspicuous deformity.

19 West Forty-seventh Street.

THE HEATH OPERATION FOR CHRONIC AURAL SUPPURATION.

BY E. C. ELLET, M. D., MEMPHIS, TENN.

During the summer of 1908, I had the pleasure of meeting Mr. Charles Heath, of London, and learning, at first hand, something about his operation for chronic aural suppuration. No detailed description of this operation has ever been published, so after seeing it done a few times, I wrote out a description of it and submitted it to Mr. Heath. The following is this description, with his cor-

Figure 1. Illustrating the extent and position of the incision.

rections and additions, and is published with his approval. The drawings are from nature, and are substantially correct, though somewhat diagrammatic, to make clear the steps of the operation.

I. A curved incision, beginning just posterior to the temporal vessels and following the insertion of the auricle till a point is reached opposite the level of the upper edge of the meatus, when it passes straight downward to near the tip. This incision goes down to the temporal fascia above, and the pericranium below. (Figure 1).

II. The anterior flap is dissected up from the fascia, and periosteum as far forward as the meatus, and the membranous canal separated from the bony canal above and backwards. The lower edge of the temporal muscle is exposed. (Figure 2).

III. The periosteum is incised from before backward just below the attachment of the temporal fascia, and again by a cut parallel with the first and on the level of the lower border of the bony meatus. An incision along the edge of the meatus joins the anterior ends of these two cuts. The horizontal cuts extend back

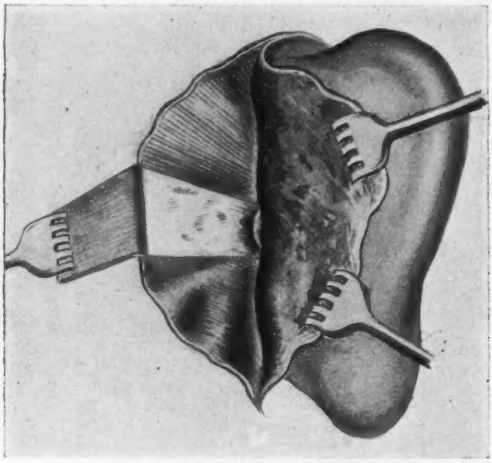

Figure 2. Shows the dissection of the tissue from the temporal fascia and pericranium. The striations above the line of the temporal ridge are to indicate that the temporal muscle lies beneath.

to the posterior lip of the wound, being completed by cuts made from behind forward to avoid cutting the skin.

IV. The periostal flap thus outlined is elevated and turned on itself backwards, and held under the skin out of the way by a special clamp. (Figure 3).

V. The antrum is opened with the gouge and mallet in the usual manner, the posterior canal wall may or may not be taken down at the same time.

VI. Most of the posterior canal wall is now removed, leaving one-fourth inch external to the membrane, and the arched part of the floor is removed, leaving an even surface from the floor of the canal to the lower part of the bone wound. Enough of the

floor, and if necessary, of the anterior wall, is removed to permit a view of the tympanum, and no "hump" is left in the floor. The "bridge" of the bone left is ¼-inch wide and ¼-inch deep. This is sufficient protection for the facial nerve. (Figure 4).

VII. The perforation in the drum is explored, cleared of granulations and enlarged if necessary, or a fresh opening made.

VIII. A canula is placed at the antral end of the aditus, and fluid and then air are blown through and out of the perforation in the drum.

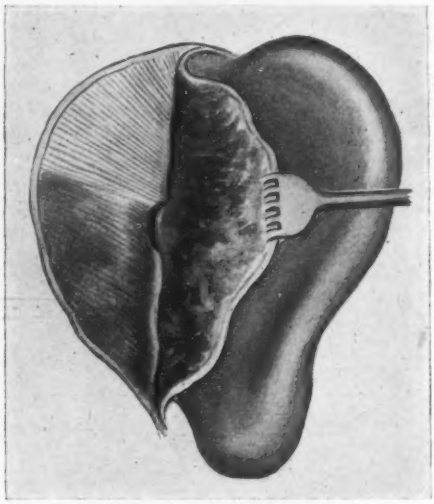

Figure 3. The periosteal flap has been outlined and elevated. The limited area of bone exposed is well shown.

IX. The single meatal flap is cut. A special angular knife is introduced in the canal, and thrust through its upper wall at its junction with the anterior wall. The anterior wall of the membranous canal is not usually detached. The knife is withdrawn and re-entered in the same incision from behind, and the cut extended outward and downward to the floor. The cut first made is extended backward along the roof to the inner end of the membranous canal. The flap thus formed consists of the posterior and upper walls and part of the lower wall. The crus of the helix is incised backwards and upwards to enlarge the meatus. (Figures 6, 7, 8 and 9).

X. The periosteal flap is released and turned down on the floor of the bone cavity. The flap of the canal wall is laid down on this,

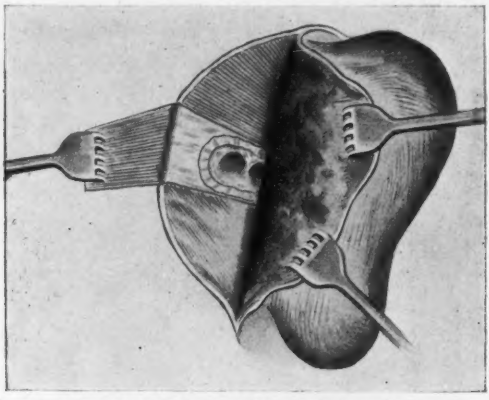

Figure 4. The bone work is completed as described. The antrum is opened, and the tympanum is in view if the floor of the bony meatus has been sufficiently lowered.

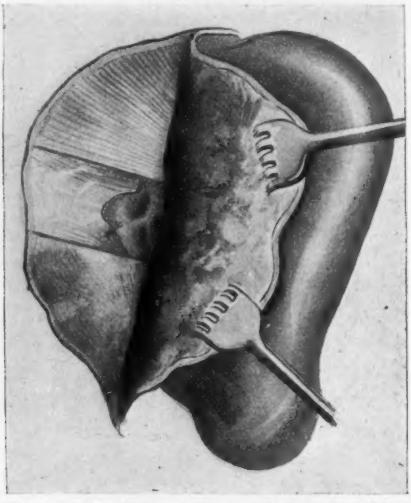

Figure 5. The periosteal flap is brought forward to partly cover the walls of the bone wound, and the meatal flap is turned down on it and the two are held together with a stitch.

and the two are united with a buried catgut stitch. (Figure 5). A tiny plug is placed in the antrum and another on the drum, and

a rubber tube ½-inch in diameter or larger, large enough to fill the meatus, and perforated, is placed in the ear, extending to the bridge.

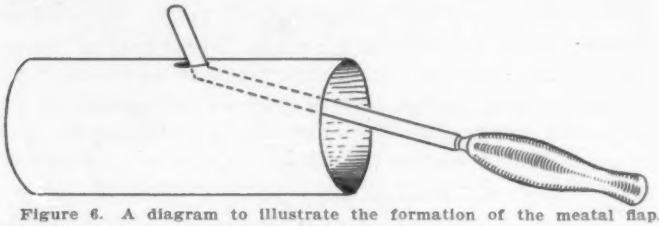

Figure 6. A diagram to illustrate the formation of the meatal flap. The first step is to thrust the special knife through the upper wall of the membranous canal at its junction with the anterior.

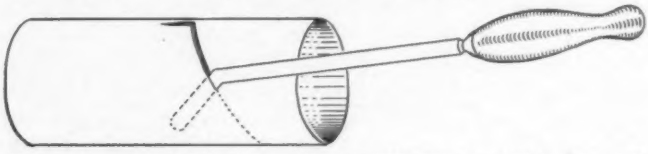

Figure 7. The second step in the formation of the meatal flap. The knife is withdrawn and reentered from behind and made to cut downward and forward.

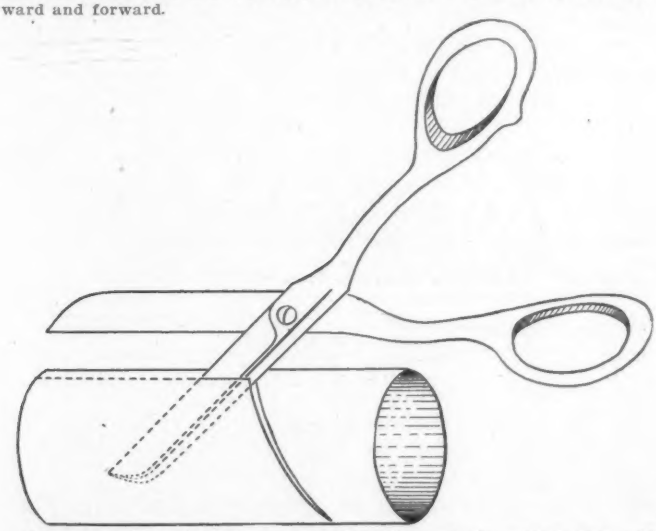

Figure 8. The third step in the formation of the meatal flap. The incision of the canal wall is completed backward with scissors.

XI. Stitches. Cutaneous only. Wet dressing. Outer dressing changed and all stitches but the central one are removed the day

following the operation. All stitches removed and all dressings changed the day after that.

In conclusion I can report two operations of this character. In the first the hearing was almost abolished before the operation. The suppuration was cured in five weeks, but the hearing was not improved, and indeed, I did not expect it to be, as the drum and ossicles were destroyed and the child had been very deaf for 6 years. The second case was a suppuration of two years' standing in a boy of 8. His hearing was variable, but about equal to whisper at

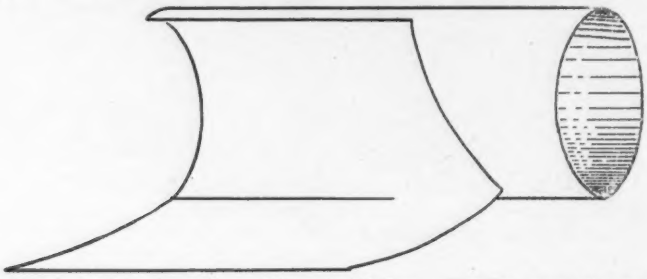

Figure 9. The formation of the meatal flap. The flap completed and turned down.

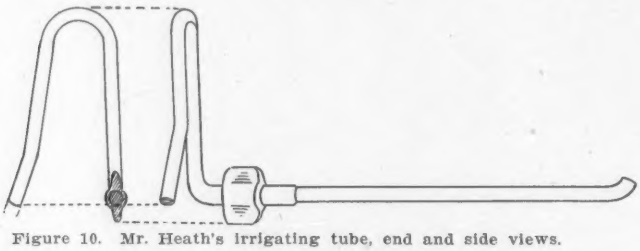

Figure 10. Mr. Heath's irrigating tube, end and side views.

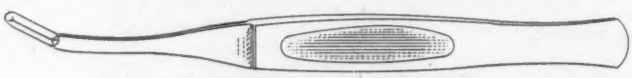

Figure 11. Mr. Heath's meatal flap knife.

fifteen feet. There was extensive destruction of the drum, but the ossicles were intact. In four weeks the suppuration had ceased, and he hears the whisper at forty feet.

By eliminating the antrum, Mr. Heath claims to eliminate the source of suppuration, and the seat of danger. A case with some mucous discharge from the tympanum is not considered a failure, if the antrum is healed and filled up, and the hearing preserved.

Randolph Building.

REPORT OF THE REMOVAL OF A BULLET FROM THE INNER WALL OF THE MIDDLE EAR.*

BY T. W. MOORE, M. D., HUNTINGTON, W. VA.

When we consider the great number of cases of direct injury to the inner ear found in surgical literature, it is remarkable how few instances of removal of foreign bodies from this region are reported. Probably this is due to the fact that these wounds are so frequently fatal.

I am acquainted with only two cases similar to mine, both reported by members of this Society: one by M. D. Lederman,[1] in which the bullet had been imbedded in the inner wall of the middle ear for over three years; the second, by J. E. Logan,[2] in which the bullet had remained in the ear over ten years. Both of these patients had a chronic discharge of foul-smelling pus from the ear, both had facial paralysis, and Dr. Lederman's a vertigo so severe that he was unable to stand alone, but, strange to say, Dr. Logan's patient seems to have been free from this symptom.

My patient, a male, aged thirty-eight years, when first seen by me, July 14th, gave a history of having shot himself while handling a revolver about six weeks prior to this. The bullet, a thirty-two calibre long, had passed through the fleshy portion of the right ear, posterior to and a little below the external orifice of the auditory canal. This wound rendered him unconscious for several days. I found him totally deaf in this ear, with facial paralysis, and complaining of dizziness that rendered it difficult for him to get about alone. There was slight discharge of fetid pus. Examination of the auditory canal revealed a piece of lead lying within and about the annular ring and covering the posterior superior portion of the inner wall of the middle ear. This seemed to be movable when touched, but I was unable to grasp it with forceps.

I made the usual incision and proceeded with the radical operation. After removing the posterior bony wall I was able to seize and remove the flattened portion of the bullet that had been visible, the rest of the ball having become detached from this piece and firmly imbedded in the inner wall. I made numerous attempts to

*Read at the meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society, held at Richmond, Va., February 12-13, 1909.

remove this with forceps, but could only detach small fragments. Finding that this method was futile, I resorted to a small gouge, and after removing numerous small particles was able to loosen the bullet by using the gouge as a lever. The hemorrhage was profuse throughout the operation, probably in a measure due to cicatricial tissue resulting from his having been kicked by a horse on this mastoid process seven years before, causing a wound that healed very slowly and so extensive that when syringed the solution would flow freely from the ear. This may explain why I was unable to find any trace of the ossicles.

The particles of bullet recovered weigh seventy-five grains. I think the full weight of a thirty-two long bullet is ninety grains. Some small fragments were lost during the operation.

The patient left the hospital two weeks after the operation with his dizziness slightly improved, his facial paralysis and deafness unchanged. A recent communication from him states that the dizziness is now much better, and he thinks that he can more nearly close his eye.

REFERENCES:

1. LEDERMAN: *Medical Record*, March 11, 1905.
2. LOGAN: *Journal American Medical Association*, March 17, 1906.

No. 1048 Third Avenue.

REPORT OF THE REMOVAL OF A BULLET FROM THE INNER WALL OF THE MIDDLE EAR.*

BY GEO. L. RICHARDS, M. D., FALL RIVER, MASS.

John Sharp, aged sixty-four years, came to see me on April 2nd, 1908. History of case, bullet injury to right ear ten years ago. Healing incomplete. Four weeks ago, chill followed by a fistula, with pus from mastoid. Examination shows mastoid fistula to be discharging serous pus. There is complete closure of the external canal, result of former injury.

April 3rd. Incision through the fistular opening shows mastoid sclerosed for the most part, with cavity containing cholesteatomatous material and leading into the cavity of the middle ear. This was all cleared out and a complete radical performed, no sign of the bullet being found. On curetting the floor and inner wall of tympanum, a small particle of lead came away, and bullet was

*Reported in discussion of the case of Dr. T. W. Moore, at the meeting of the Southern Section of the American Laryngological, Rhinological and Otological Society, held at Richmond, Va., February 12-13, 1909.

shown to be imbedded in the lower half of the inner tympanic wall in close proximity to facial nerve. As there had been a facial paralysis since the former operation and the hearing in this ear was practically nil, the under wall of the facial canal was cut away sufficiently to enable me to cut underneath the bullet and pry it out. This was done without apparent injury to the facial nerve, as the nerve looked normal, the original injury to the facial nerve being farther back and probably having occurred at the time of the entrance of the bullet.

June 1st. Healed in with the exception of one portion of bone, which is not yet covered. There is a little better use of the muscles of the face. The hearing is also improved somewhat.

August 19th. Case dismissed.

84 N. Main Street.

Some Lessons in Tonsil Surgery. CHAS. B. YOUNGER. *Illinois Medical Journal*, June, 1909, page 676.

While the writer countenances partial removal, or tonsillotomy, for the relief of obstruction when no other symptom is recognized, he advocates through removal, or tonsillectomy, in that very large proportion of cases characterized by disease or degeneration of the gland in which case, so he states, the disease in most instances extends throughout its entire substance. The gravity of the tonsil operation should not be underestimated. It is properly a hospital operation and should not be undertaken without careful praparations. In any method selected, the chief precaution should be the avoidance of persistent bleeding or secondary hemorrhage; therefore the method which will acomplish the result with the least traumatism is to be favored. He advises ether anesthesia to a degree of deep narcosis in children and cocain anesthesia in adults.

In operating, blunt dissecting is advised as far as practical to be followed by cutting instruments until sufficient separation is secured so the pedicle can be severed with either a tonsillotome or cold snare. The particular method selected varies with the physical formation of the tonsil being removed. PYNCHON.

THE IMPORTANCE OF THE THOROUGH STUDY OF THE NASOPHARYNX IN TREATMENT OF DISEASES OF THE EAR.*

BY FRANCIS R. PACKARD, M. D., PHILADELPHIA.

Although before a gathering such as this, it may seem somewhat trite to present a paper with the title borne by mine, I feel that the subject is one of great importance and presents some aspects which are possibly not sufficiently dwelt upon, and that, therefore, it would not be amiss to thresh over again some points with which possibly familiarity has bred contempt. There is a saying which has well nigh become a proverb amongst aurists and has been attributed to various distinguished laryngologists in the United States, that "some day the rhinologist will do away altogether with the necessity of the aurist," meaning thereby to imply the great frequency with which affections of the ear depend upon diseases of the upper respiratory tract.

The point I would particularly emphasize is the necessity for a thorough examination of the nasopharynx before undertaking the treatment of any aural condition. It seems to me that this examination is much too frequently, either altogether neglected, or carried on in such a manner as to be practically useless. In teaching in a post-graduate institution, I have frequently been struck with the fact that the physician-student in the aural clinic, who has been told repeatedly to make an examination of the nasopharynx in every case of ear trouble, considers that he has carried out his directions when he has inserted the tongue-depressor in the patient's mouth and examined what is revealed in that manner. As Politzer says in his text-book, "Often, however, without the slightest visible changes on the posterior pharyngeal wall, affections of the mucous membrane of the nasopharynx may nevertheless be found, which are very far advanced. The absence of changes on the posterior pharyngeal wall does not, therefore, render the examination of the postnasal space unnecessary."

Among some of the pathological conditions in the nasopharynx, excluding the acute infectious diseases which may give rise to disease of the ear, are:

1. The presence of adenoid growths in the nasopharynx which may act either as a mechanical obstruction, interfering with the

*Read at the Annual Meeting of the American Otological Association, Boston, June, 1909.

ventilation of the eustachian tubes, or as a source of infection to the middle ear because, as is well known, practically every adenoid mass is inhabited by numerous pathogenic micro-organisms which, under favorable circumstances, find easy access to the middle ear through the eustachian tube. Every aurist must be familiar with the frequency with which chronic suppuration of the middle ear completely ceases, after the removal of a mass of adenoid tissue from the nasopharynx. This has occurred so frequently in my own work that it has become an automatic process with me to at once turn to the nasopharynx as a possible source for the continuation of a chronic discharge from the ear in almost every instance. I believe that in very many of these cases such nasopharyngeal examination is neglected, and the attention of the aurist is devoted almost solely to finding the origin of the trouble in some local condition within the ear, such as the presence of dead bone or suppuration within the mastoid.

2. So-called catarrhal infections of the nasopharynx are frequently a source of disease of the middle ear, chiefly by the mechanican occlusion of the eustachian tube, which results from a swollen mucous membrane. Personally I feel that, in most instances, so-called nasopharyngeal catarrh is generally the result of some more serious condition in the nose or its accessory sinuses, especially the sphenoid, but the term "nasopharyngeal catarrh" is probably firmly fixed in rhinological literature, whether it is used to express a distinct entity, or to signify the condition of the mucous membrane of the nasopharynx as the result of disease elsewhere in the nose or accessory sinuses.

3. The atrophic condition of the mucous membrane of the nasopharynx which is usually seen in association with chronic atrophic rhinitis, leads to the accumulation of decomposing crusts in the naso-pharynx, and under these circumstances the orifices of the eustachian tubes are more patulous than normal, and it is quite common to see disease of the middle ear result from the patient's blowing or washing infective material into the tubes.

4. Tumors, other than adenoid growths, may occur in the nasopharynx. The author has personally seen a case in which a sarcoma protruded into the nasopharynx from the sphenoid region, first manifesting itself by aural symptoms, the patient complaining of increasing hardness of hearing and tinnitus.

5. The occurrence of adhesions in the nasopharynx, generally the result of previous operative work, is, I believe, a not uncommon

and a frequently unlooked-for source of disease of the eustachian tubes and middle ear. Dr. J. W. Jervey, of Greenville, S. C., in a paper read before the South Carolina Medical Society, in 1906, and published in its transactions, called attention to the frequency with which adhesions in the nasopharynx were sources of pathological conditions in the eustachian tubes and ear. Dr. Jervey stated that he had had his attention called to the subject by Dr. Brunk, of Birmingham, Ala., and Dr. Pynchon, of Chicago. He reported a series of cases, all of which had been greatly improved by breaking up adhesions in the nasopharynx. Shortly after reading Dr. Jervey's paper, I had the opportunity of seeing a patient who had been under his care and had been treated by him, in whom he had broken up a number of adhesions which occluded her eustachian tube orifices. This young woman was the daughter of one physician, and the sister of another. She had had an adenoid growth removed from her nasopharynx and her tonsils taken out in childhood. Some years after the operation she began to notice that her hearing was impaired and that she also suffered from increasing tinnitus. She was placed by her father and brother under the care of a distinguished aurist, and after his death was treated by several others. Her condition not improving, she went abroad, where she consulted aurists in several cities. Returning to this country, she went for the winter to Greenville, S. C., at which time Dr. Jervey saw her. He proceeded to destroy the adhesions which he found in her nasopharynx, by inserting his index finger and forcibly breaking up the bands with the most gratifying results. Upon her return to Philadelphia, in the early spring of 1908, I saw her professionally for the first time. I had been a friend of her brother's and had known her and been aware of how very great was the deafness from which she suffered, although I had never treated her. When she entered my office, I was struck with the great improvement which was immediately apparent in her hearing for ordinary conversation. I examined her nasopharynx and found it was quite free from any evidence of adhesions or any other abnormal conditions. She volunteered the statement to me that she had had absolutely no relief from the usual measures of treatment which had been employed in various hands, until a careful examination of her nasopharynx had been made and the adhesions within had been destroyed. From that time she said her hearing had shown progressive improvement. Dr. Jervey has since published[1] an article in which he gives further details as to his method of work and

1. Journal of the American Medical Association, May 16, 1908.

its results. He also appends to his article a bibliography of the subject.

Since my attention was drawn to the subject by Dr. Jervey's publications, I have had the opportunity of studying a number of cases in which ear trouble undoubtedly originated from the existence of adhesions in the fossa of Rosenmueller and the nasopharynx, the breaking up of which resulted in a gratifying improvement in the aural condition. These cases presented almost identical histories, namely, prolonged eustachian and middle-ear trouble, with increasing deafness, without relief from the usual measures of treatment by Politzerization, massage, hot air, etc. Several of these cases had had adenoid operations in childhood. The method I pursued in the treatment was identical with that of Dr. Jervey, namely, after the nasopharynx is thoroughly cleansed and cocainized, the index finger of the right hand is introduced and the adhesions forcibly torn across, after which silver nitrate solution or a solution of albuminate of silver is applied over the torn surfaces.

From the observations which are recorded above, we may draw the following conclusions:

1. That in every case of middle-ear disease which presents itself for treatment, one of the most important measures to be employed is to make a thorough examination of the nasopharynx.

2. The examination of the nasopharynx should be made, not only with the mirror, but with the finger. The examination should be made, first, before cleansing the nasopharynx, and again after cleansing it. If the nasopharynx is examined while it is full of mucus or other discharges, important alterations within it may be concealed. On the other hand, a visual examination should be made, or at any rate be attempted before cleansing it out, in order that we may ascertain whether there are accumulations of discharge or morbid materials within it. In the case of children or adults in whom it is impossible to use the mirror, the nasopharynx should be cocainized through the nares and a digital examination made. The digital examination of the nasopharynx is, as a rule, so much disliked by patients, that the rhinologist is very apt to neglect it. Of its great value, however, there is no doubt, and I believe it should be made the routine practice in every case in which it is not possible to get a thorough view with the mirror.

3. Although the presence of obvious growths, such as tumors or adenoids, or the existence of inflammatory conditions in the nasopharynx, have had the importance of their presence as a source of

aural disease recognized for many years, the existence of adhesions in the nasopharynx as a cause of pathological conditions within the ear, has been largely overlooked, chiefly because of the difficulty attendant upon the examination of the nasopharynx which would lead to the discovery of their presence.

As my apology in presenting the foregoing remarks on a subject which must be regarded as somewhat commonplace by the majority of my hearers, I would state that my reason for doing so is that it seems to me that in most of the text-books, and on the part of some of the teachers in our medical schools, there is a noticeable laxity in directing the students' attention to the importance of nasopharyngeal examination in the proper study of diseases of the ear.

No. 304 S. Nineteenth Street.

2. Since writing the above paper my attention has been called to a mast valuable article by Dr. F. P. Emerson, of Boston, entitled "Rosenmueller's Fossae and Their Importance in Relation to the Middle Ear," published in the Boston Med. and Surg. Jour., April 23, 1908, in which he deals with the subject in a very similar way.

Polyphobia with Other Nervous Disorders in a Rhinopathic Patient. G. D'AINTOLO. *Bolletino delle malattie dell' Orecchio, Naso e Gola*, No. 1, 1909.

The case is that of a young man with stenosis of both the nasal fossae, caused by deviation and hypertrophy of the cartilage of the septum towards the right, and by hypertrophy of the inferior turbinate towards the left, presenting the following nervous disorders: Cephalagia, astrophobia, anthropophobia, monophobia, agarophobia, verbal amnesia, dyspepsia, and asthma. The author thought that all of these disorders were caused by the pathological conditions of the first air passages, and he subjected the patient to operative treatment. The result was favorable, for the various "phobias," dyspepsia and asthma ceased altogether; some disturbances of slight importance only remained. LASAGNA.

CLINICAL DIAGNOSIS AND OPERATIVE PROCEDURE IN INTRA-LARYNGEAL CARCINOMA, FROM THE STANDPOINT OF THE LARYNGOLOGIST.*

BY CHEVALIER JACKSON, M. D., PITTSBURG, PA.

In regard to the *probatory histologic examination* of an intra-laryinically removed specimen my results therefrom have been much more satisfactory since the slide speculum has enabled me to get an adequate specimen from precisely the desired location, removing the edge of the base inclusive of a little normal basal tissue.

In one of his many masterful writings on laryngeal cancer Sir Felix Semon (*British Medical Journal*, February 2, 1908), very courteously takes me to task for among other things, the results of the examinations of endo-laryngeally removed fragments which were negative in fourteen out of twenty of my cases that, upon later examination of the entire growth, proved to be malignant. While acknowledging the justness of the criticism, I must repeat what I have before written, that we are all prone, in these latter days, to lean too heavily upon the laboratory; that the histologists' report can only be made upon the piece of tissue submitted, not upon the entire growth until this shall have been removed; that his report must be taken along with the anamnesis, the systemic tests, the laryngoscopic appearances, the palpation of the neck, etc.—from all of which the laryngologist must make a final diagnosis on his own responsibility. No one has been a closer student of Sir Felix Semon's work than I, and from reading his writings I feel certain that this is what he really does himself; as, indeed, is evidenced in the very paper referred to. An ideal diagnostician is one who in addition to being a skillful laryngologist has the requisite experience in the histologic examination of laryngeal neoplasms. I envy those who have an opportunity to consult with Dr. Jonathan Wright and Dr. D. Braden Kyle.

INDICATIONS FOR OPERATIONS IN CANCER OF THE LARYNX.

Indications may be given for specified operations, but of course it is with the understanding that the growth, once started after, is to be extirpated, be the operation what it may, provided, of course, the growth is not found to be extensive beyond all hope of complete removal. Cutting through a growth is always contra-indicated be-

*Read by invitation before the New York Academy of Medicine, joint session, May 20, 1909. The portion of the paper dealing with the clinical diagnosis will appear in a subsequent issue THE LARYNGOSCOPE.

cause of the risk of cancerous wound infection; therefore, while one operation may seem to be indicated a totally different one may be required to avoid this risk. Briefly, that operation or combination of operations is indicated which will best give access to the diseased structures and render feasible their entire removal, en masse if possible.

Operation of some kind is indicated if:

1. A diagnosis of malignancy has been made.
2. There is a reasonable prospect of entire removal.
3. There is hope of clearing up the diagnosis by an exploratory operation.

Indications for thyrotomy.—An intrinsic malignancy (suspected or proven) of limited extent.

Indications for laryngectomy. (A) Any operable malignancy in the larynx not operable by thyrotomy.

(B) Malignant disease of the esophagus behind the larynx. In this location the posterior wall of the larynx is usually involved on its esophageal aspect.

Indications for Subhyoid Pharyngotomy.—Malignant disease of the epiglottis and extrinsic laryngeal disease of limited extent, without intrinsic involvment. It gives abundant access to the upper orifice of the larynx.

Indications for Subhyoid Pharyngo-laryngotomy.—This is the operation of choice where free access is needed to the upper portion of the larynx in the removal of extensive growths. It is practically a combination of subhyoid pharyngotomy and thyrotomy.

Indications for Autoplasty.—Gaps or deficiencies of tissue of the air or food passages due to operative or morbid loss of substance reparable by variously-formed flaps, the epidermal surface of which is usually turned inward to serve as mucosa.

Contra Indications.

To any operation other than palliative.

(A) Local. Impossibility of entire removal. High degree of malignancy, or high degree of vulnerability, which may be the same thing.

(B) General. Mestastatic foci; organic disease; feebleness; alcoholism.

The general contra indications are of the greatest importance. Had I operated upon every case that presented itself my mortality would probably have been over 80 per cent. Alcoholism, always

unfavorable in surgical work, is particularly so in major laryngeal work.

Contra-indications to thyrotomy.—Extension of the disease beyond the "intrinsic" region, cartilaginous perichondrial or glandular involvement. Usually even if intrinsic, bilateral disease contra-indicates thyrotomy.

Contra-indications to Partial Laryngectomy.—Bilateral involvment of more than slight extent. An extrinsic growth, especially if it involves the epiglottis or aryepiglottic folds. Extrinsic extension, even of sharply monolateral, renders total laryngectomy imperative.

Contra-indications to Laryngectomy.—The chief contra-indications are the general ones mentioned. It is particularly necessary to determine whether it is possible to remove all of the infected

Figure 1. Patient after subhyoid pharyngotomy. Large "double chin" hiding scar.

Figure 2. Same patient; head thrown back.

glands. If clearly impossible any radical operation is absolutely contra-indicated. It is also particularly necessary that the patient shall be in good condition. If he have organic disease of serious nature or extent he will live longer without laryngectomy. This operation is also contra-indicated if it is possible widely to remove the growth by thyrotomy or subhyoid pharyngotomy. The latter operation is particularly available in early cancer of the upper laryngeal orifice, and by it sometimes important laryngeal structure may be saved. This, however, is very rarely possible for any extensive operative work on the larynx that interferes with the function of the epiglottis is absolutely contra-indicated unless the tracheal stump be brought forward and sutured to the skin to cut off infective drainage into the lungs. It is true that amputation of the epiglottis alone carries a very slight risk, but it is a very minor procedure, and the

subsequent wound discharges are slight in amount. My contention only applies to major work beyond the limits of the epiglottis itself.

Contra-indications to Subhyoid Pharyngotomy.—None except the general contra-indications already given. The thick layer of adipose tissue usually referred to as a contra-indication, in no way complicates the operation, and has a cosmetic value in hiding the scar as shown in Figs. 1 and 2.

Technic.

Illumination.—An essential is illumination by headlight between the eyes, where its axis shall coincide with the visual axis, illuminating at all times the point at which the surgeon is looking, not up on top of the head, where it sheds an uncertain diffused light. It is most important in all operations upon the air passages to remember that while every patient is more or less immune to the organisms he himself harbors, he is vulnerable to the same kinds of organisms introduced from other sources.

It seems almost impossible to inculcate into some students the idea that while we must work in a field exposed to the organisms of the patient's mouth, we must be just as careful in all other details of our technic as if we were operating upon the brain. Anesthetists smile indulgently when I ask for a technically "sterile anesthesia," with "arm-gloves," etc.

Technic of Thyrotomy.

Anesthesia.—If there is no laryngeal stenosis, and there almost never is in a case where thyrotomy is indicated, light, "talking" anesthesia with chloroform should be invariably used. If there is any laryngeal stenosis, under no circumstances is any general anesthetic used until the trachea has been opened under local anesthesia, then chloroform is given. If there is any contra-indication to chloroform in this or any other circumstance, local anesthesia alone is used. Ether is never given for a laryngeal or tracheal case. Local anesthesia is by intra-dermatic, not hypodermatic injection, with a solution of one grain of cocaine hydrochorate and one drop of carbolic acid to the ounce. The latter is for chemical sterilization, the solution being prepared twenty-four hours before it is needed; chemical sterilization in weak dilution requires time. Boiling cocaine lessens its anesthetic power, and makes it irritating. After the larynx is opened the mucosa is painted with a 20 per cent cocaine solution. This is not repeated as it would not act any way after the excision has begun. Adrenalin is not used. Chloroform, when used, is given

upon a sponge grasped in a hemostat and held over the wound. The operation is not interrupted, but the anesthetic often is, which I consider a very safe plan of anesthesia in air-passage work. The cough reflex is never completely abolished for more than a minute or two at a time, in order that the cough may prevent aspiration of blood and secretions.

Operation.—No tracheal canula is used. No Trendelenberg or Hahn cannula is used. The patient is placed in the Trendelenberg-Roser position. I have been frequently criticised for saying that blood will not run up hill. It is argued that it can be aspirated up hill. To come down to the physics of the matter it may be stated that while blood could be aspirated up the inclined *closed* trachea, the blood lies in the opened part of the trachea or larynx. Thus we have a tube (the trachea) ending in a trough (the wound). It is impossible to aspirate fluid along an open trough. But apart from this my patients are never so deeply under that the tracheo-bronchical cough reflex is totally abolished. The laryngeal cough reflex is abolished by the local application of a 20 per cent cocaine solution; or if this fails to act it may be necessary to use Criles method of nerve block, by injection of 4 per cent cocaine solution into the trunks of the superior laryngeal nerves. This I have not found necessary to prevent reflex cardiac inhibition, possibly because of the slight general anesthesia, but I formerly used nerve blocking to lessen the laryngeal cough reflex. For many years past, however, I have become accustomed in all branches of throat work to operate with active reflex, coughing, gagging, etc., that I do not care for complete abolition of the cough reflex at any stage.

No tracheotomy is done and no tracheal canula is used.

Technic of Laryngectomy.

Anesthesia.—All that has been said under thyrotomy applies equally well to laryngectomy, except that it is more common to operate upon cases with stenosis. If trachectomy is deemed necessary it is done under local anesthesia. Usually, however, Glucks' plan of operation from above downward is followed. The ordinary tracheal canula is inserted in the upper orifice of the larynx (and fastened there by stitches), as the larynx is brought forward from above out of the wound.

Before proceeding with the lantern demonstration of the technic of the laryngeal operations I would like to say a few words about after treatment.

Post operative care of Thyrotomy cases.

1. Antibechics are strictly forbidden.

2. Foot of the bed is elevated. No pillow is allowed under the head, but a small pillow is used for a cushion to prevent contact of the head of the patient against the head of the bed. Also a small pillow is used in the hollow of the back, as needed to prevent backache, which often is more distressing than the wound.

3. All food is sterile and served in sterile vessels, for five days after operation, by which time the granulations protect the wound from infection.

4. No tracheal canula is used, but it is kept in the room, sterile, ready for immediate insertion.

Figure 3. Method of dressing laryngeal and tracheal wounds. Note the "cover piece" laid all over and beyond the wound, and the "wedge roll" held in the forceps ready for forcing into the depression corresponding to the wound.

The wound in the cartilage is never stitched; neither is the wound in the skin. Sometimes the edges of the thyroid cartilages override, but sutures will not prevent this. The edges adjust themselves before final union.

The wound is packed firmly and kept widely open until the cartilages are firmly bound together by cicatrical tissue. True, cartilaginous union probably never results, but fibrous union is just as firm and rigid. If the whole wound were stitched the skin would unite *per primam,* but fungating granulations springing from the cartilage would invade the larynx and wound secretions would flow into the trachea. The system of dressing that Dr. Ellen J. Patter-

son and I have perfected keeps the wound open and keeps all the secretions of the wound as well as those escaping from the trachea drained out into the dressings. The dressings are of gauze, wrung out of mercuric bichloride 1: 10,000, changed every three hours. Most general surgeons who have honored me with their presence are horrified at the idea of changing the dressings on a virtually aseptic wound every three hours. But this is just one of those points where in laryngotracheal surgery differs from general surgery. The nurses must be trained in this class of work, for the frequent dressings must be done by them. Two special nurses are absolutely necessary.

The form of the gauze pieces is shown in Fig. 3. The first piece is laid over the entire front of the neck, but is indented into the wound first by the forceps; afterward being held in by a little roll of gauze, as is seen held in the forceps. (Fig. 3.) The purpose of this is to permit of a tight packing, which will keep the wound open and drained, and remain in place, yet not have any ends to get into the laryngeal wound causing cough.

Should it be necessary to use the tracheal canula, the wound is cared for as referred to under "Tracheotomy." (See LARYNGOSCOPE, April, 1909.)

TABLE I.

CANCER OF THE LARYNX.

Cases of Cancer of the Larynx seen in twenty-three years—1886 to 1909	141
Of these the disease was intrinsic in	98
Of these the disease was extrinsic by origin or extension in	43
Of the extrinsic cases the growth had extended beyond the limits of the larynx in	25
Number of patients operated upon (seventy-two operations)	63
Of these operations there were palliative (tracheotomies, esophageal dilatations, etc.)	24
Of these operations there were thyrotomies	22
Of these operations there were complete laryngectomies	14
Of these operations there were subhyoid pharyngotomies	9
Of these operations there were Hemi-cricoarytenoidectomies	2
Partial laryngectomies included under laryngectomies (done later)	3
Partial laryngectomies included under thyrotomies	3
Partial laryngectomies not included	1
Of the laryngectomies and pharyngotomies there were extirpations of the cervical esophagus in	6
Of the laryngectomies and pharyngotomies there were extirpations of other portions of neck including the external, internal and common carotid arteries, pneumogastric nerve, jugular vein, submaxillary gland, lymph nodes, tongue, hypo-pharynx, etc	8

TABLE II.

THYROTOMY.

Number of operations	22
Too recent for record (four and seven months respectively)	2
Alive and well after nine years	1
Alive and well after six year	1
Alive and well after four years	1
Alive and well after three years	3
Alive and well after two years	3
Alive and well after one year	2
Died of general diseases after one year	2
Lost trace of after one year	4
Died of recurrence (in spite of laryngectomy)	3
Died within thirty days	0

Recapitulation:—Of twenty thyrotomies, seventeen of the patients were free from recurrence at the end of one year. No operative mortality.

TABLE III.

COMPLETE LARYNGECTOMY.

Number of operations	14
Died within thirty days (14 percent.)	2
Lived seven years (dying of cancer of stomach)	1
Lived three years (dying of cerebral hemorrhage)	1
Lived two and one-half years (dying of local recurrence)	1
Lived two years (dying of recurrence)	2
Lived one year (thereafter lost to observation)	3
Lived less than one year, dying of local recurrence	4

Recapitulation:—Of fourteen complete laryngectomies, eight of the patients were free from recurrence at the end of one year. Operative mortality fourteen percent.

The development of cancer in the stomach, seven years after the laryngeal operation indicates a vulnerable soil and a reinfection, not a repullulation of the primary process. We cannot cure vulnerability by operation.

TABLE IV.

PARTIAL LARYNGECTOMIES.

Number of operations	7
Died within thirty days	1
Recurrence requiring complete laryngectomy and therefore included among laryngectomies	3
Included under thyrotomies	3

Operative mortality fourteen percent.

The fatal case succumbed to septic pneumonia owing to removal of part of the epiglottis. The discharges from the wound ran down the trachea. He would have been far safer had a total laryngectomy been done, and the trachea stitched to the skin.

TABLE V.

SUBHYOID PHARYNGOTOMIES.

Number of operations	9
Died with thirty days	0
Well at end of five years	3
Well at end of three years	2
Well at end of one year	2
Lost to observation after eight months	1
Recurred in six months	1

Recapitulation:—Of nine subhyoid pharyngotomies for cancer seven were well and free from recurrence at the end of one year. No operative mortality.

TABLE VI.

HEMI-CRICO-ARYTENOIDECTOMIES.

Number of operations	2
Died within thirty days	0
Well at the end of one year	2
Recurred within two years	2

In the foregoing tables I have classed deaths occurring within thirty days of operation as operative deaths, without regard to cause. The recapitulation shows the number of patients free from recurrence at the end of one year. Without going at length into the question as to how long a time must elapse before a patient may be classed as a cure, I merely wish to reiterate my statement many times published before, namely: There is no such thing as an absoluate cure of malignancy. If cancer may appear in other locations, seven years after its removal from the larynx, it indicates a vulnerability of soil not repullulation of the primary process. For purposes of comparison of the efficency of various operative procedures, one year is long enough. If cancer reappears thereafter it indicates not operative inadequacy but vulnerability of soil. We cannot cure vulnerability by operation. Recurrence prior to the end of the first year may mean operative inadequacy, resulting in repullulation of the primary process or cancerous infection of the wound at the operation.

I wish here to record the termination of a case of one of the rarest laryngeal neoplasms I have ever encountered, an endothelioma. (Wright.) The patient consulted Dr. Emil Meyer and Dr. Francke H. Bosworth, who both concurred in my diagnosis of malignancy, though as to the type of neoplasm we were all uncertain. I have previously (*Pennsylvania Medical Journal*, June, 1907), reported the case, and I wish here to add to the record of its termination. One year after I had removed the larynx, upon examina-

tion of the patient in consultation with Dr. Gustav Killan, we found an incipient recurrence in the soft tissues of the neck, point of origin not determinable. The patient at this time weighed 200 pounds, and was in the best of health. He went to the office, the theater, club, baseball games, etc. Re-operation was refused and the patient died of hemorrhage from erosion two and one-half years after operation, the growth having almost decapitated the patient. The trachea was destroyed far down into the mediastinum. By the use of the long tracheal canulae designed by me many years

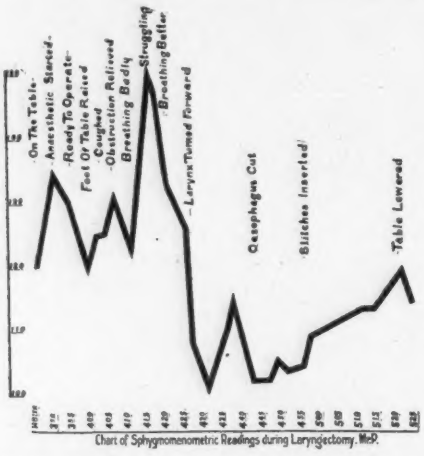

Figure 4. Sphygmomanometric chart by Dr. John W. Boyce. It shows graphically the shock produced by tugging on the esophagus during one stage of laryngectomy and indicates the role played by the esophagus in stage of laryngectomy and indicates the roll played by the esophagus in mortality after laryngeal surgery.

ago for low tracheal stenosis, the air was piped down to the stump of the trachea, through the fistulous tract maintained in the mediastinum. I intubated his esophagus, but finally gastrostomy was required. It was skilfully done by Dr. F. F. Simpson. Gastrostomy was done by a general surgeon upon another one of my cases (referred by Dr. S. E. Allen, of Cincinnati) prior to my operation and the appeasing of thirst and hunger was such a satisfaction to the patient and solved so many post-operative problems that I unhesitatingly advise it preliminary to every laryngectomy and insist upon it in every case in which the esophagus is involved. In the case referred to there was involvement of the upper two inches of the

posterior wall of the esophagus as well as the hypopharynx. The esophagus had to be resected beyond all hope of autoplastic repair, A sausage-string suture was placed around it and it was obliterated.

The high operative mortality in former days may have been due to injury of the parathyroids, as suggested by Solly; sloughing of esophagus (of which I had one case); injury to both vagi; sepsis; septic pneumonia, etc. My personal opinion is that the two chief factors are connected with the esophagus. One of these, cardiac inhibition (which seems to me from a clinical point of view to be

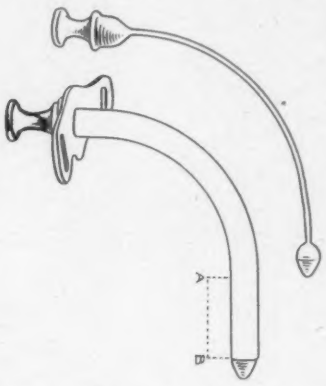

Figure 5. Tracheal canula for use after tracheal resection or deep stenosis. The portion A. B. is straight and may be of any length reaching to the bifurcation or in some cases into a bronchus. The special form of flexible pilot is necessary because of the straight portion A. B.

more directly related to the esophagus than to the larynx), was demonstrated by Dr. John W. Boyce upon patients of mine, as was reported at the meeting of the British Medical Association (*British Medical Journal*, November 24, 1906). (See Fig. 4). The other factor is sloughing of the esophagus. The cause of the necrosis is unknown to me.

[The author then gave a lantern demonstration of the various steps in subhyoid pharyngotomy, thyrotomy, hemi-laryngectomy, hemicrycoarytenoidectomy.]

Westinghouse Building.

MICROSCOPICAL DIAGNOSIS OF INTRA-LARYNGEAL GROWTHS FROM A PRACTICAL STANDPOINT.*

BY JONATHAN WRIGHT, M. D., NEW YORK.

In making the remarks I have in mind upon the microscopic diagnosis of laryngeal growth I do not intend to enter upon it from the standpoint of general histology, but from the practical standpoint of the microscopist who attempts in the laboratory to supplement the endeavors of the diagnostician in the clinic, not from the vantage ground of the pathologist who is supplied with the whole tumor after it is cut out by the surgeon, but from that precarious and slippery foothold to which the microscopist is confined when he is presented with a tiny bit of tissue chipped off the surface of a laryngeal growth with a pair of forceps, nay, not even surely off the growth, but perhaps from some other part of the endolaryngeal surface in the neighborhood of the growth, with the assertion from the operator that it *did* come from the growth. I take it this is the practical standpoint to which the most interest is to be attached in this discussion, so far as the histological diagnosis is concerned. It should also be realized that the microscopist,—if he really fulfills his duty, can not prudently hide his opinion on the plea of insufficient evidence. He is not there to protect his reputation for a knowledge of pathology, he is there to assist as best he may the clinician. He is to advance his opinion too, not in a case where, by expressing it he may share the responsibility of depriving a woman of a long since useless gland, is it not a question of spoiling the cosmetic appearances of some elderly man long since beyond the vanities of a smooth and unwrinkled cheek. He is here concerned in a plan to inflict upon a human being the most frightful mutilation to which one can be subjected. And this is the price he must pay for a comparatively brief increase, at the best, to his span of life. The necessity for such a frightful sacrifice as laryngectomy should be unmistakable. I describe thus luridly the position of the microscopist in these cases in order that an emotion of pity may sink into the heart of that individual, who, of course, is not here present but who at times brings into the laboratory a bit of tissue, or a section from one, without a clinical history, without an expression of opinion as to the clinical diagnosis, without a description of the laryngo-

*Published by consent of the editor of the New York Medical Journal and of the author.

scopic appearances, and finally without mentioning the fact that he already has a diagnosis from another microscopist. I understand that the state of this individual's mind is one which leads him to conclude that by suppressing these biological data, he will receive an unbiased opinion. I refrain from comment which seems obvious; perhaps it is simply sufficient to say that the surgeon and the microscopist can only hope to be mutually helpful, and above all, helpful to their patient, by the fullest and frankest interchange of information and opinion. The opinion of the microscopist as to the meaning of a cell or two in his shred of tissue may hinge up on the question of whether the patient has been thoroughly treated for syphilis. It not infrequently happens that in the process of exclusion in the microscopic study of a section the conclusion is reached that structurally it can only be one of two things. Here the clinical history may definitely decide between these two things though powerless to exclude things the microscope is able to accomplish. The contingencies are innumerable where the clinical history is a deciding factor in the microscopic diagnosis.

While I desire to confine myself to the special points involved in the subject allotted to me, it is unwise entirely to pass over a phase in the general discussion of cancer which of late years is being brought more and more into prominence and with which I have dealt elsewhere, more at length, than I am permitted to do here. I refer to the subject best described by an hibernianism, "the benign course of malignant growths." There can be no doubt of the fact that certain cases afflicted with cancer which have, up to a certain point run a typical clinical course, in which the growths have been declared to exhibit the typical structure of cancer in its various forms by the most competent of microscopists, which nevertheless, without operation or without any radical extirpation have permanently recovered their health and the growths have disappeared. I need only refer to an expression of v. Hansemann, one of the most acute of living observers of pathological histology: "As a matter of fact, the most practiced observer frequently encounters in it surprises which fly in the face of all experience," a teutoine saying which again in itself contains an hibernianism, but which points as decidedly as do the cases of D'Arcy Power* and of many others, to the conclusion that structure is not a final or satisfactory ex-

*D'Arcy Power: The Lancet, March 4, 1899. There have been since then a large number of more or less convincing reports of spontaneous recovery from cancer. Czerny most recently cites a case (Zeitschrift f. Krebsforschung, B. 17, hft. 2, 1909). The observation of the spontaneous recovery of dogs and mice from tumors of malignant structure has become a common observation in experimental work.

pression of malignancy. Every one who has had much surgical experience knows of the spontaneous recovery from tumors pronounced malignant by the microscopist as well as by the clinician. Now the clinician is always modest enough to acknowledge his own fallibility, and says, in such cases, he was mistaken, but in his inmost heart he thinks the microscopist should have known better. Now, as a matter of fact though, the microscopist is in the same box as the clinician—they are both fallible—yet it is becoming clear from the observation of animal experimentation with cancer that they are fallible because some thirty or forty years ago a slip in logical reasoning occurred. It was observed that most men afflicted with tumors of a certain tissue synthesis die from the continued growth. We jumped to the conclusion that *all* men die who have tumors with that particular synthesis. It was dogmatically asserted that structure, the apposition of certain kinds of matter in a certain arrangement, is an expression of malignancy. Forgetful of the fact that in the cancer question, as in every other question under the sun, there are two sides to it, one the invasion of the malignant cells and the other the resistance to it, we have ascribed to the clinician and the microscopist the error inherent in a fallacy presented by a faulty syllogism. This plainly arose from the study of structure in advanced cases of cancer. It is evident that when a cancer has gone so far as to make the diagnosis unanimous from the clinical side and the histological side, and especially when it has gone so far as to exclude the possibility of its radical extirpation, so that it is left to its spontaneous course, the patient has usually entered upon a stage which is more or less surely fatal in any disease. Yet even so, an imposing array of cases are on record where the patients have recovered from this stage of a disease which has been called cancer in the clinic and in the laboratory alike. I need not dwell with any further emphasis upon the conclusion that structure is not an infallible guide, and that really all the microscopist has any right to say in any given case is that the tissue presents the appearances usual, in cases which end fatally. Now while this may seem amply sufficient, on account of the rarity of cases recovering at the stage where reasonable doubt of diagnosis is admittedly very slight, it is a different matter entirely when we come to deal with a small excrescence on the vocal cord. At the very outset such a cancer causes symptoms that can not be concealed, and no set of men see cancer at so early a stage histologically as the laryngologists. It naturally follows that when the microscopist is given a paring from such a growth he more frequently falls into error if he says

from the same structure exactly as in the advanced cases, that it is going to run a fatal course if left to itself. The structure is the same, but the result, the clinical prognosis, if the tumor is left to itself, manifestly must be more uncertain.

I may not have succeeded in impressing upon you anything you have not known before, but if I have succeeded in convincing you how extremely fallible the microscopist dealing with intralaryngeal growths is, and why from general consideration as well as from special limitations he is so fallible, and above all, how charitably you should look upon his mistakes, I have accomplished all that I expected.

Had the histology of cancer first been studied on nascent growths, it is probable there would never have arisen that conviction so long firmly fixed in the medical mind that a certain tissue structure, left to itself, means the death of the patient. The eagerness to extirpate growths at this stage has resulted probably in a considerable average prolongation of life, and it seems quite probable that very many of the triumphant statistics of operation on cancer we are really warranted in accepting on their face value, but I am sure the thought must have impressed itself on many that the happy results attained in many cases, especially when we include such cases as Butlin does, are to be ascribed to the fact that structure and especially the nascent structure of tumors, is not a safe criterion for prognosis if left to itself. The precancerous stage of cancer of the tongue is probably a valuable asset in surgical nomenclature, but it is apt to be very misleading in pathology and biology. The surmise that some of these prae-cancers would never have become cancers if left to themselves is irresistible. That we ought to operate on such growths in cancer of the larynx as well as in cancer of the tongue can hardly be denied, but that has little bearing on the diagnosis or the etiology or the nature of cancer. I have transgressed the limits set by myself to this paper, yet perhaps, the transgression may be considered pertinent to the subject. For the advance of medical science, I think it is necessary to make way for the view that malignancy is a question of molecular dynamics, of which tissue structure is an imperfect revelation. Moreover I have been compelled to sacrifice time to these general considerations because I consider them all important to the specific problems as they present themselves to the microscopist in the opinion he is to express.

I can best utilize such time as still remains to me by discussing certain common objective appearance in the most numerous class

of laryngeal growths brought to my attention, those springing from or infiltrated in the epithelial layers of the vocal cords. The flat-celled epithelioma of the cords presenting itself as only a small papillary excrescence or a shallow ulcer is the condition as seen in the laryngeal mirror. I will spend no time on the exuberant widespread growths or those with deep infiltrations limiting the movements of the larynx and accompanied by metastases. The clinical diagnosis here is all but made before the microscopist has the tissue, and the tissue when he has it is often of an extent to allow him to get some idea of topography, which is the most valuable asset he can have in his material from which to draw an opinion. The advanced conditions are frequently cases in which the microscope is a very necessary adjunct to clinical diagnosis, but they have little interest for us here. The typical appearances of cancer structure are described in every text-book. Of more interest would be a discussion of the points of differential diagnosis by the microscope of cancer from syphilis and tubercle. but it is impossible to treat of this in a sane way except as instanced in some one case. The ridiculous parallel columns of the text-books are sources of irritation rather than of information to the practical observer. In view of the fact which I have emphasized, of the extreme smallness of the tissue, brought up by the endolaryngeal forceps and of the nascent state of the growth in many of these cases, the least objectionable way of treating of the subject is a consideration separately of the objective phenomena having the greatest weight, except that of topography, in the diagnosis of this kind of cancer.

First as to epithelial whorls: Now when one sees these in a section of a minute fragment taken from a sessile growth, with even the slightest loss of surface tissue as seen in the laryngoscope, there can be no question that the appearance is of grave import. Yet both in the larynx, especially in benign papillomata, and in the epithelium of the tonsil there are often seen circular cell nests or concentric rings made up of epithelial cells whose cytoplasm bears a more or less normal ratio to the nucleus as to volume. In benign conditions presenting these concentric whorls, the cytoplasm as well as the karyoplasm is usually well defined, and the presence of chromatin free from the nucleus is not a prominent feature in the cytoplasm. The latter does not present the hyaloid appearance with acid stains as a rule. If there is a bit of hyaloid matter in the whorl, it is usually oval or ovoid and confined to the center of the whorl. The center of the whorl may be seen to be the smallest sort

of a capillary or a mere protoplasmic thread of connective tissue. In other words, the source of its nourishment and its origin is more or less apparent and its structure exhibits some symmetry. I will not stop to describe the malignant whorl as that in its general features must be well known to you. This differentiation seems all very clear, it may seem so to the neophyte, but unfortunately, these are only types, from which the divergence is frequent in both direction, that is, regular symmetrical whorls may often be found in the epithelial cancer or cancroid, and still more unfortunately this regularity may be distorted by freezing or other hardening methods and even with the best of them all the characteristics ascribed to the malignant cancer nest may be seen in growths which have no confirmatory evidence of malignancy and which run a perfectly benign course. Now these concentric rings are the features that stand out in the frozen section and I can not but believe that errors of microscopic diagnosis are more apt to occur with this method. All things considered, however, I am always disposed to place more reliance upon this one feature than upon any other to be noted in the epithelial shavings I am so often called upon to declare came from a malignant or a benign structure beneath. You may say no one should venture to express an opinion on such evidence, but I differ from this view very decidedly. I can only ascribe it to the temptation to take one's self and one's precious reputation too seriously. A surgeon brings in a bit of tissue which seems ample to him though in reality it may be almost entirely made up of epithelial scruff which many kinds of epithelial hyperplasias benign and malignant furnish, and in the small bit of living remnant it may contain, one sees one or two of these little whorls. Now those one or two little things woven into a full clinical and descriptive history may have an import, which would be entirely wanting to them without such free and frank and full interchange of opinion, and for the microscopist to englobe himself in the dignified reticence or non-committal vesture sometimes assumed, is in reality a shrinking from his duty for fear his record for omniscience may pass under a cloud. What the surgeon wants to know is what his opinion or only his surmises are from what he has been able to offer him, and to these the surgeon and the patient have a clear claim, but if on the other hand the surgeon comes into the laboratory and goes out of it with a lingering belief in the power of structure to spell a prognosis for his patient with or without operation, eventually he will come unduly to condemn and neglect the help the microscope can give him when properly treated. It is

vitally important then that the surgeon should understand the grounds for the microscopist's opinion and its limitations.

Islands of epithelium, isolated groups of epithelium in the stroma, upon which so much stress used to be laid, have become somewhat invalidated as evidence from the uncertainty which often attaches to the nature of cells closely resembling the basement layer of the mucosa and at the same time apparently identical with the epitheloid or lymphocyte cells of the stroma. This is especially the case in the so-called basal celled epitheliomata of Krompecher, but these are doubts attached to the examination of larger pieces of tissue than one usually gets from the laryngeal forceps, and the topography of the growth usually helps one out, and with that kind of specimen I am not here dealing. To pass on to the atypical cell: We grow accustomed to a certain sized cell in a certain position, but, more pertinently, we grow accustomed to a certain normal range of proportion between the size and shape and situation of the nucleus as compared to the cell-body, and when these things are disturbed, they produce an impression on the microscopist more easily referred to in general terms as being atypical than accurately described, but which yet have a very considerable influence in shaping the opinion of the observer. One may say, speaking in a teleological way, they do not seem to subserve any physiological purpose, for the benign tumor, while it may subserve no physiological purpose, does not in its separate component cells give that impression. Were time not pressing, it might be profitable to analyze these appearances more closely, but it is necessary to say something of the appearance of the nucleus in the atypical cells. I have referred to the abundance of chromatin material in the cytoplasm and with less particularity to the relative situation of the nucleus in the cytoplasm. In certain places we expect to see it in one part of the cell and in other places in other positions, but in a number of cells lying together we expect to see it more or less in the same relative position. When we see this is not the case, but that the neighboring nuclei are not obeying some common law in a more or less similar way, we are suspicious that we have to do with a kind of lawlessness of growth incompatible with the continued existence of the organism as a whole. A great deal of significance has been attached by v. Hansemann to the irregularities in the mitotic figure. The chromatin threads instead of presenting a more or less regular spindle with distal poles and a common equator or a figure with a constricted center and flaring radii from it, having approximately the same number of chromosomes and amount

of chromatim and the same arrangement one side of the equator as the other, show an irregularity and a lack of equilibrium which denotes a disturbance at the molecular basis of life itself. Now, in many growths and especially in malignant growths, the cells are proliferating and often show an abundance of mitotic figures. Were it possible slowly and carefully to harden such bits of tissue as are given us and to lay them in very thin sections under the microscope, appropriately stained, were we sure our sections in any given case passed through the proper plane of the figures in question, I have no doubt that this token of molecular disturbance, being as I believe the visible manifestation of the lack of altruism which lies at the basis of cancer, would be the most important of all the indications which structure presents of malignancy. But in practice, such is not the case. We must have rapid processes of preparation. I have deprecated the custom of using the frozen section, but even with several days of preparation, we have a jumbling of the mitotic figure which usually leaves us in doubt if there is any real asymmetry or not. Yet it has been shown that asymmetry of the spindle may be artificially caused and there are many conditions of rapid proliferation of tissue, not cancerous, in which one occasionally sees an apparently very marked asymmetry. There is one condition of the nuclei that has some bearing on the microscopic diagnosis of cancer. In addition to the fragments of nuclei, of endogenous or extraneous origin within the cytoplasm of the cancer cells themselves, there is usually in the stroma around a focus of malignant epithelium a great deal of fragmentation of the fixed and wandering cells of the connective tissue. This is a condition most marked in syphilis, yet when we have an epithelial hyperplasia such a phenomenon in the stroma around it has some significance in the decision between cancer and pachydermia. I have in mind a specimen received from one of the gentlemen present some years ago, a little stretch of stroma which presented this marked nuclear fragmentation. As the clinical diagnosis hovered between syphilis and carcinoma, I was rash enough to say the tissue indicated the former. In a few days I received another bottle holding two such litle crescent-shaped pieces from the same case. Mounted together the sections of one piece were the exact counterpart of the first fragment but the other little crescent showed pracically all the diagnostic marks of an epithelioma. Now in this instance the forceps had removed one bit from the tumor and the other bit from beyond its periphery. Under the circumstances, then, which the microscopist labors when he deals with this part of

his work, there can be nothing more ridiculous than regarding the microscope as "a court of last resort," and nothing more unwise than to rule it out of court altogether.

As I have intimated, I shall not dwell on the combination of all the points to which I have alluded here, and many others in the study of sections from cancer, for usually when one has enough tissue to study the topography of the growth, the microscopists' difficulties cease. I may, however, allude to the rare cases in which separate pieces, repeatedly submitted for examination, presented no conclusive evidence for cancer when considered separately, but when all the appearances were combined in the scale, it inclined heavily to the side of cancer, but this is often ruinous to the patient's chances. It is much better to cut down at once in such a doubtful case and extirpate the growth on the surgical diagnosis alone.

44 West 49th Street.

Contribution to the Histo-pathology and to the Electrolytic Therapy of a Vascular Tumor of the Tongue. L. CLERC. *Annali di Laryngologia e Otologia*, No. 6, 1908.

A girl eleven years old had had since birth an irregular, voluminous tumor of a papillomatous appearance on the posterior two-thirds of the superior surface of the tongue. The tumor was formed of several strata of keratinous epithelium, with lymphatic and venous vessels and connective tissue. It was therefore a congenital malformation of the lymphatic system, constituting the so-called morbid form, macroglossia, interesting for its atypical aspect. The patient was subjected to electrolytic monopolar treatment eighteen times, for twenty minutes at each treatment, with a maximum of ten milliamperes. The tumor disappeared entirely.—

LASAGNA.

OPERATIVE PROCEDURES FROM THE STANDPOINT OF THE GENERAL SURGEON.*

BY GEORGE E. BREWER, M. D., NEW YORK.

Cancer of the larynx, whether considered from the point of view of the laryngologist or the general surgeon, presented one and the same problem. Can the victim of this dread disease be subjected to any form of treatment which would offer a probability or possibility of cure, or if not, can anything be done to mitigate his sufferings? Not one authentic case of carcinoma of the larynx was ever cured, except by early surgical removal of the disease. Four methods of radical surgical treatment had been proposed. (1) Intralaryngeal removal; (2) thyrotomy, allowing exposure of the diseased area, and removal of the lesion with subsequent closure of the laryngeal cavity; (3) partial laryngectomy; (4) total laryngectomy. The almost uniformly disastrous results which have followed intralaryngeal removal of the growth, had led to its general condemnation and abandonment. Since Semon's masterly presentation of the subject in America in 1904, thyrotomy or laryngotomy was an operation that had steadily grown in favor, and was to-day the operation of choice in early cases of intrinsic cancer. He said he could do no better in this connection than to quote Semon's advice regarding indications. "All intrinsic cases of cancer, not too extensive, not too near the posterior wall, and not infiltrating the cartilages, ought to be treated by thyrotomy." Partial or hermilaryngectomy was indicated in cases of unilateral intrinsic disease, in which the leison extended too far backward to promise a favorable result by simple thyrotomy, or when there was reason to believe that the perichondrium or cartilage was involved. Although the indications for this operation were not as frequently encountered as for thyrotomy or total laryngectomy, it had the great advantage that it preserved the normal oral or nasal respiration, and not infrequently allowed the patient to retain a speaking voice of fair quality. The cause of the immediate mortality of total laryngectomy was recognized by all careful observers to be, first the occurrence of inhalation pneumonia, and second, the extension of the infection from the wound downward along the cellular planes of the neck to the mediastinum. The first

*Author's abstract of paper read by invitation before the New York Academy of Medicine, April 28, 1909.

notable advance in technique was that proposed by Gluck in 1881, who suggested and practiced prophylactic resection of the trachea and implantation of the distal extremity through a button-hole cutaneous wound just above the suprasternal notch, thus cutting off all connection of the air tube with the wound, and preventing thereby the entrance of pharyngeal mucus and wound secretion. In 1908 Gluck reported 128 operations, twenty patients were alive and free from recurrences at the end of three years, or a trifle over 15 per cent. Two operations had been advised to diminish the suffering in advanced and inoperable cases, tracheotomy and the starvation treatment, recommended by Dawbarn. Dr. Brewer said that he had performed thyrotomy sixteen times with one death; of these sixteen cases only seven were for undoubted carcinoma. His experience with total laryngectomy was limited to eleven cases; of these five died as the result of the operation and six recovered. Dr. Brewer's technique in total laryngectomy was as follows: Under general anaesthesia a median incision was made extending from the cricoid to the sternal notch. The isthmus of the thyroid was doubly ligated and divided. The separated edges were pushed to each side and the trachea freely exposed. A low tracheotomy was then performed and the canula introduced, after which the upper part of the incision was united with silk worm gut sutures, and the peri-tracheal spaces generously packed with iodoform gauze, both above and below the canula. The wound was dressed and the patient placed under a tracheotomy tent, into which a small amount of steam is introduced by means of a croup kettle. The external opening of the tracheal canula was constantly covered with four or five layers of gauze wet in warm boric acid solution, with a view of filtering the air which entered the trachea. About ten days after the preliminary operation the secondary operation was undertaken. Under chloroform anaesthesia an incision was made from the body of the hyoid downward to the upper limit of the former cut. From the upper extremity of this incision two lateral incisions were made in an upward and outward direction, extending to the anterior borders of the sterno-mastoid muscle. The two triangular flaps were turned outwards, the sterno-hyoid muscles divided just below their attachment, and the sterno-thyroids detached from the cartilage. The two superior arteries were ligated. The superior laryngeal nerves were cut and all lymph nodes removed. The attachment of the inferior constrictors were next divided and the posterior surface of the cricoid partly separated from the esophagus. When the larynx was thoroughly skeletonized, the trachea was sev-

ered just below the cricoid and its distal extremity immediately packed tightly with gauze. The finger was next introduced into the upper or laryngeal segment of the tube, and the larynx gently raised from the esophagus. When the larynx was completely separated from the esophagus, the tips of the thyroid cornua were divided, the thyro-hyoid membrane incised, and the larynx completely removed. The pharyngeal wound was then packed with gauze. The oval pharyngeal wound was next tightly closed by two layers of suture. After closure of the pharyngeal opening, the entire wound is temporarily packed with wet formalin gauze, while the tracheal stump was prepared for closure. This was accomplished by removing redundant tissue above the canula opening, dissecting out or destroying with cautery the mucous membrane, and packing firmly with iodoform gauze above the tube. A rubber feeding tube was then introduced through the left nostril into the esophagus, and secured. The wounds were next united above with general gauze packing about the tube. He then described the after treatment.

61 West 48th Street.

Stenosis of the Esophagus. J. M. BELL. *Medical Forthnightly*, May, 10, 1909.

The author states that the object of his paper is to call attention to the frequency of stricture of the esophagus, and the necessity of early diagnosis. It is lost sight of, not because its obscurity so much, as to indifference to the physical examination, and the cause is overlooked because of the length of time elapsing after the injury, (trauma or caustic drink), and also the absence of pain. The differential diagnosis depends upon the lack of all gastric ferments in the vomitus; the only hope of early diagnosis is through a thorough examination of the whole digestive tube.

Two cases are quoted, in both of which the condition was detected incidentally during the course of overhauling to which all gastric cases are subjected, the patients complaining of no esophageal disturbance. EATON.

THE ORBITAL ROUTE TO THE ACCESSORY SINUSES.*

BY PERCY FRIDENBERG, M. D., NEW YORK.

When I consider that there are within the sound of my voice gentlemen who have made valuable contributions, both practical and theoretical, to the subject with which my paper deals, I fear that my presentation may be, as it were, carrying coals to Newcastle. The subject of accessory sinus diseases and their surgical treatment is a border line topic, and here, as on other borders, there has been at times strife, the reverberations of which still reach us from afar.

The ophthalmologists at a very early time had the question of accessory sinuses thrust upon them by the orbital complications, and their work was not the development of operative method by choice so much as the following out the principles of general surgery in the radical treatment of orbital complications. The rhinologists made a very careful study of the conditions, so it is mainly to them that we owe our knowledge of the intricate details of regional anatomy and topography of the accessory sinuses, the methods of examination and clinical diagnosis, such as transillumination, probing, irrigation, and intra-nasal curettage.

The sinuses of the face might be said to be accessory to the nose and accessible to the orbit, and while the orbital route is the most direct path in the operative treatment of the sinuses, it is the route *from* the accessory sinuses, so far as pathology is concerned. The subject is so wide and the anatomical and clinical facts are so well known to you that I will pick out only a few points of special importance which have been interpreted from different standpoints.

First, the relation of the accessory sinuses to the orbit. We certainly do not realize the very wide extent to which the accessory sinuses border on the orbit. Of late, attention has been called to the sphenoid and posterior ethmoid cells and their relation to the optic nerve by Loeb, but they are not the most extensive or important. The orbital walls of all the sinuses are very large, and the orbital wall of the frontal sinus may be its largest. The orbital walls are also frequently the thinnest walls. Attention has been called to the various vascular communications leading from the orbit to the accessory sinuses. Even a superficial study will show that they are

*Read before the New York Academy of Medicine, April 28, 1909.

more numerous than the text-books would indicate. In many cases these fissures are large apertures, giving broad access to the sinuses, and frequently there are congenital openings and dehiscences due to atrophy or disease. We are accustomed to speak of the venous channels and lymphatics as channels of infection, but it has been shown by careful study of 800 cases that the most direct extension is by bone disease, or by the venous channels of diploe, orbit and sinuses, and veins leading to the soft tissues, to the bony walls and dura, and perhaps by the lymphatics. A large majority of cases of orbital cellulitis and of bone disease of the orbital walls depend upon accessory sinus disease.

(Dr. Fridenberg here passed around photographs taken from the dissecting-room of Cornell University, showing some variations of the orbit and the foramina leading to it.)

Knowledge of the relations of the optic nerve to the accessory sinuses is a recent acquisition, but at an early stage it was known that protrusion, with deviation of the globe, swelling of the inner angle of the eye, disturbances of ocular motility, etc., indicated an extension from the accessory cavities, and that cases of orbital cellulitis could be better treated if the wall of the orbit was attacked and the disease process traced to its original point.

Over 60 per cent of all known orbital infections are of accessory sinus origin. In other cases the complications are not so much orbital as ocular, and frequently in these the pathogenesis is extremely obscure. The optic nerve atrophies and neuritis are in many ways similar to cases of toxic amblyopia, due to alcohol and tobacco, and painstaking examination and even prolonged treatment is required before an exact diagnosis can be made.

In studying the operative treatment of accessory sinus disease from the ophthalmological and rhinological standpoints, it seems that the rhinologists were afraid to attack the orbit. The ophthalmologists were better acquainted with it and were not afraid of two points—the bony spine for the pulley of the superior oblique muscle, and the lachrymal sac. (Fig 1). They found that both of these structures may be disregarded or side-tracked by appropriate methods. The bony spine for the trochlea is present in less than 10 per cent of the cases; it can be easily detached with a small chisel, and where there is no bony spine—nothing but fibro-cartilage inside the peri-orbita—an incision down to the bone near the margin of the orbit and retraction of the peri-orbita will preserve the relations of the pulley without any trouble. As far as the lachrymal passages are

concerned, we can separate the lachrymal sac without much difficulty, detaching it provisionally from its bed in the lachrymal fossa, or—where this proves to be impossible or inadvisable on account of disease of cells or of the bony wall in the immediate neighborhood, —sacrificing it without hesitation. From the operations for extirpation of the sac we have learned that there are no subsequent complications, not even the obstinate epiphora which was expected.

The rhinologists who developed the external operation seem to have always had in mind the danger of injuring the pulley or the sac, and even Killian in his first form of operation stops short at the pulley. One of the results of this form of opening through the anterior wall of the frontal sinus was the attempt to establish drain-

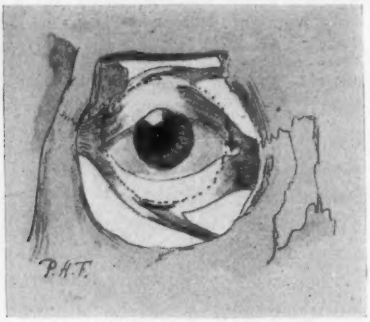

Fig. 1. Front view of orbit showing relation of globe to walls. Tarso-orbital fasciae in relation with lachrymal fossa intranasally and with trochlea, above and inward.

age further anteriorly than is necessary. Many of these operations removed a large extent of the frontal process of the superior maxilla, the nasal bone, or the orbital process of the frontal, structures which are practically outside the nasal cavity, rarely contain air cells, and are still more rarely affected by extension of disease from the accessory sinuses. The agger nasi is formed of dense bony tissue, in the removal of which the use of chisel and mallet is required, and the necessary hammering is by no means to be regarded as insignificant. Blows on or near the orbital margin frequently cause splinter fractures of the thin orbital walls, leading far down into the depths. Such fractures or fissures may open up a communication into suppurating cells or into the cranial cavity, or,—as has actually occurred,—cause sudden blindness by extension of the fracture into the optic canal, with direct compression of the nerve.

As to intra-nasal procedures, I will merely mention, in passing, the extreme variability of the sinuses and, above all, the irregularity, narrowness and occasional absence of the ostia by which they communicate with the nose. In disease conditions the ostia may be occluded or obliterated. In frontal sinus disease a marked predilection has been demonstrated for the left side, the male sex, and the later years of life,—three factors in the production of *a large sinus*, which will become diseased more easily, or at least heal less promptly, and be more prone to retention and complications than a small one. That observation is of direct and important significance at this point, as large sinuses are apt to be irregular, contain septa, and are less easily drained through the usual single small ostium at one end, and this still further reduces the chances of thorough treatment by removal of diseased tissue through the nose. The obscuration of the field by hemorrhage, the possibility of wounding important structures,—orbit wall, optic nerve, internal carotid, pterygoid plexus,—and the danger of post-operative infection, are further objections.

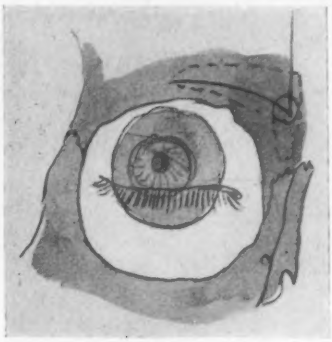

Fig. 2. Nebinger-Praun. Curettage of Sinus and Naso-Frontal duct. Drain at inner end of brow.

Onodi and others have admitted that they are often unable to probe the accessory sinuses from the nose. Onodi himself, says in 50 per cent of cases he could not probe the frontal sinus. Cryer, in this country, came to the same conclusion. However, we may differ as to the possibility of entering the normal sinuses, or even those which are diseased, we cannot be sure of successfully attacking diseased sinuses and treating them thoroughly and surgically through the nose.

You may say that rhinologists have passed that point and now attack the diseased cavities from without, but a word in regard to the orbital operation may not be out of place as long as men are devising instruments for opening the sphenoid or frontal sinus through the nose,—such as the pilot and burr, bone drill, and frontal sinus punch,—as long as an authority like Onodi advises in the treatment of accessory sinus suppuration with manifest orbital and threatening cerebral complications, "broad intra-nasal opening" of the sinuses, and as long as rhinologists of standing, recommend that the treatment of chronic frontal sinus disease with orbital abscess due to infection through the floor of the sinus should be treated by an aperture which *"under no conditions"* is to be made larger than the

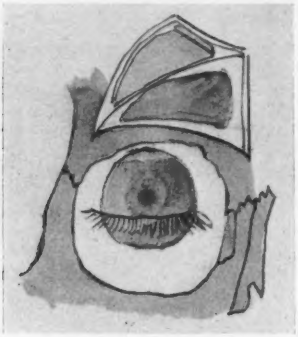

Fig. 3. Frontal Sinus. Osteo-plastic resection of Anterior Wall.

tip of the forefinger, *and in some cases smaller,* combined with a *simple opening* of the orbital swelling.

I have here sections of the orbit which have been taken from Dwight's work on the orbit, showing the wide extent to which the accessory sinuses are in contact with the orbit. I have also a number of lantern slides which I will demonstrate, and will hand around a few drawings showing the main points of the anatomy of the orbit, and drawings showing incisions which have been suggested for the external operation. The external can be contrasted with the the intra-nasal operation, but it is *not necessarily an orbital* operation. A number have been suggested and many of them do not come in contact with the orbit at all. (Figs. 2, 3, 4).

Men have tried to get into the sphenoid in different ways,—as though the frontal or maxillary antrum,—all of which attempt to

avoid going in along the inner orbital wall, the direct and least dangerous route. The inner wall of the orbit contains practically no structures which can be injured. If the inner orbital wall is laid bare, and the globe and peri-orbita is retracted, you have along the wall for 45 or 50 mm. back practically nothing but the two ethmoidal foramina to look out for, and which are important not because they must not be attacked surgically, but because they represent the floor of the anterior cranial fossa.

The advantage of the orbital route is not only its accessibility, but it is the one method by which thoroughness can be secured. Cases have been and can be cured by intranasal methods. We know of cases in which the ocular symptoms have disappeared after care-

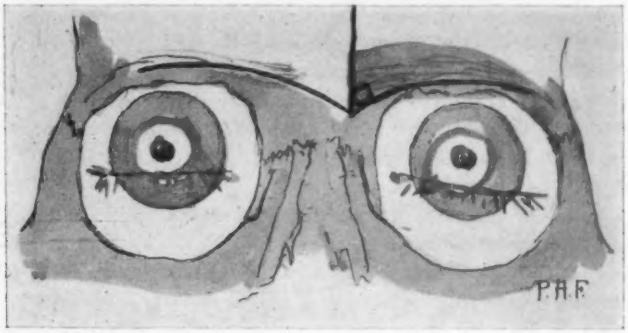

Fig. 4. Kuhnt. Complete removal of Ant. Wall. Drain at inner end of brow. Incision for bi-lateral op.

ful intranasal treatment, but given a case of fistula, sub-periosteal abscess, or of evident orbital infection, we can never be sure that the intranasal methods are complete and thorough. Removal of the middle turbinates and snaring of hypertrophies may promptly clear up some cases, but there are others in which these are merely preliminaries and must be followed up immediately by the radical operation.

Another point that I want to make is that the orbital operation is the best safeguard against complications, as by that means only the thorough removal of the source of disease and adequate drainage can be assured.

This is a comparatively unexplored field. It is quite evident, however, that Intracranial complications, severe ones, are not so very rare, after comparatively trivial operations. See the case reported

by Ingals, in which a patient after intra-nasal operation was syringed with too much force, complained immediately of violent frontal pain, followed by intolerable headache, developed meningitis, and died. Castex reported a case in which the frontal sinus was perforated by probing through the nose, the frontal lobe infected, and a frontal abscess developed. Gerber notes a large number of such cases, but it would take too long to go into the details. I will merely cite the development of meningitis after tamponing for excessive hemorrhage during the intra-nasal operation. Ballenger mentions this as a contra-indication to all tamponing. But you may have to tampon or take the chances of the patient bleeding to death.

Just one point more is that if in your intra-nasal operation you do transcend the limit of the cells of the accessory sinuses and enter the orbit or cranial cavity, the danger of septic complications is greater than any possible injury during the orbital operation. The orbital contents are in close contact with the wall, and perforation may produce infection or cause an injury, of which you are entirely ignorant. The symptoms may be attributed to concurrent sinus disease, and the case may come to autopsy before you find out the cause of the condition.

A very careful study of the anatomy of the sphenoid showed more than one case in which the optic nerve ran free in the cavity. If it does that in 1 per cent, or in 1-10 of 1 per cent, the intra-nasal curetting of the sphenoid cavity is a dangerous procedure.

Other important structures are in close contact with the inner wall. I have a head which I prepared at the Cornell dissecting rooms, showing a rather wide opening of the accessory sinuses along the upper and inner wall on one side, and on the other side dissected to show the attachment of the pulley of the superior oblique muscle and the lachrymal passages at the orbital margin.

60, East 58th St.

OBSERVATIONS ON SOME UNUSUAL CASES OF FRONTAL SINUSITIS.*

BY L. M. HURD, M. D., NEW YORK CITY.

The cases of frontal sinus disease presented in this paper are selected to illustrate some unusual symptom or condition and to emphasize two symptoms that have been usually attributed to some other condition, namely, vertigo and neuralgia of one or more branches of the trigeminal nerve.

First, vertigo, with a tendency to pitch forward. This is by no means a constant symptom, but it is met with frequently in both acute and chronic cases, and to my mind is suggestive of frontal or anterior ethmoidal involvement. I have one case in which the vertigo is severe enough to cause the patient to pitch forward on her face; another that could not go about the street without an attendant; another, weaver by trade, who was nearly injured by falling upon the looms; and still another double acute case that could not get out of bed because of the vertigo.

Neuralgia, due to frontal sinus disease starts in the supra-orbital branch and may extend to any other or to all the branches of the trigeminal nerve. This form of neuralgia is usually caused by the sinus and yet is of a very periodic type. I have never seen the neuralgia in a chronic frontal sinusitis. The period of pain is about the reverse from the ordinary type of frontal pain, which is felt as soon as the individual rises and continues during part of the day, stopping when the sinus has partially drained itself. On the contrary, the frontal neuralgia comes on at about the same time every morning, continues for a number of hours, and stops as suddenly as it began. I have seen a patient experience intense suffering while the pain lasted, and a short while after it ceased, feel quite well again.

There is the same pain and tenderness about the region of the frontal duct, with considerable congestion of the membranes, with slight or no evidence of purulent secretion from the frontal sinus. The neuralgia will cause congestion of the conjunctiva, with lachrymation, flushing of the skin, high tension of the blood vessels (temporal artery), and pain. The secretion in the sinus is thick, tenacious mucus, mixed with some pus cells. It looks as though

*Read before Laryngological Section, New York Academy of Medicine, April 28, 1909.

the frontal sinus had become filled with muco-pus and the lining membrane had endeavored to absorb it again, taking up all the more fluid elements, and leaving behind the mucus which seems to have the special mission of irritating the supra-orbital nerve. When the plug of mucus can be douched out, it comes away as a gummy mass and the neuralgic pain immediately ceases; at times the mucoid mass cannot be immediately washed out, and then it seems as if the addition of the fluid from the douche helps to dissolve the mucus and it comes out of its own accord or when the sinus is subsequently douched. These patients have some tenderness over the frontal sinus, but as they usually consult you during the pain, it is generally masked by the neuralgia. I am at a loss for a reason, why the neuralgia suddenly starts each day at the same hour and as suddenly stops at a stated time about the mid-afternoon, as this mucoid mass remains in the sinus day after day, but as soon as it is removed the neuralgia ceases to return.

REPORT OF CASES.

E. T., English, aet. 45, female. For five years has had headaches, vertigo, loss of smell, purulent nasal discharge; in 1904 some polyps removed; in 1906, I opened and removed ethmoid cells and anterior sphenoidal walls, also entered right antrum below inferior turbinate. These sinuses ultimately became clean and dry. I also enlarged fronto-nasal duct and douched frontals; headaches and vertigo disappeared, and she regained her sense of smell. Six months later headaches and vertigo returned, also vomits, sometimes in conjunction with the vertigo. Pain is most intense while it lasts. I again enlarged frontal ducts, which relieved symptoms for several weeks. Since then has headaches, vertigo, and vomiting about twice a month. The vomiting is not accompanied with nausea. The vertigo is so severe at times that she has fallen down stairs, pitched forward in the street, etc. These attacks last twenty-four to forty-eight hours, when pus appears from nose and attack ceases.

Between attacks the sinuses are clear on transillumination, only a small amount of pus in the sinus. There is necrotic bone in left frontal duct, as revealed by the probe and her sense of smell has again disappeared.

I strongly advised external opening of both sinuses, but she consulted a colleague between attacks, and he found no urgent reason for external operation. He had an X-ray plate made which tended

to show that the sinuses were empty—all of which I believe to be true, but the facts remain that she has some frontal tenderness, vertigo and anosmia at all times, with intense pain, vertigo and vomiting, about once a month. She puts off operative procedures from month to month so I am unable to say what the true condition is. It appears to me that she has either an extra-dural abscess that fills periodically—which would explain the permanent loss of smell and attacks of pain or may be the lining mucous membrane of the frontal sinus swells enough to cut off the drainage through the nose, and until this is relieved the symptoms of pressure continue.

S. M., male, aet. 15, American. For several years has had attacks of pain about the left eye. I have seen him during several of these attacks, but there was little tenderness and no evidences in the nose of frontal sinus disease. An ophthalmologist has prescribed glasses, which he wore. General doctor called it malaria and treated it accordingly, but the attacks became worse and he developed vertigo. I succeeded in washing a few drops of pus from frontal sinus. The anterior end of the middle turbinate was removed and this followed by irrigations, which brought away some pus. The symptoms cleared up entirely in about six weeks.

Mrs. N. H., aet. 40. January 1, 1909. Some two years ago had grippe with profuse yellow discharge from nose, which continued in less quantity up to two months ago, when frontal pain and headaches began, accompanied with vertigo. There was a small quantity of pus about the anterior end of the infundibulum. The anterior portion of the middle turbinate was removed, and though the frontal duct could not be probed, the region was injected every second day with lactic acid bacillus suspension. This seemed to diminish the symptoms for several weeks; then they returned, and some of the anterior ethmoids were removed, without relief.

She was admitted to the hospital, and X-ray plates were made, which, however, were not clear enough to be of service. At this time she complained of headaches (frontal) pain and tenderness over frontal sinus, and vertigo which caused considerable restlessness. Eye grounds normal. Nasal douche q. 2 h. Transillumination: dark both sides; no improvement at end of week. Operation. As soon as anterior frontal wall was opened, the sinus was found to be normal; work on anterior wall discontinued and ethmoids entered via frontal maxillary process. These cells were completely filled with pyogenic membrane, there being no space for

pus. One cell extended out over the orbit fully one inch just behind the frontal sinus, being separated from it by a thin partition of bone. It was about a quarter of an inch wide and flat, and hugged the frontal sinus in the form of a crescent. The remaining ethmoid cells were removed and the sphenoidal orifice enlarged; wound closed with metal clips, which were removed in twenty-four to thirty-six hours. Immediate relief of headaches. Vertigo gradually subsided in four weeks.

F. N. F., aet. 34, American. June, 1908. Has had neuralgic frontal pain for two days; some yellow post-nasal discharge. The first time I saw him it was about 3 p. m. The region of the nasal orifice of the frontal duct was intensely congested; considerable pain and tenderness of frontal sinus. While I was attempting to probe the frontal duct under cocaine and cuprenalin the pain suddenly ceased. I thought I had established a vent for the frontal sinus through the congested area, and felt quite content with my efforts. The patient said that four years previously he had a similar attack that came on every morning at 10 o'clock and lasted until 3 p. m., when the pain stopped as suddenly as it appeared and he could return to work. At that time he was in a mining camp without surgical aid. He said that the pain was so intense that he went out of his mind nearly every day during the attacks, and that this present attack—though not yet so severe—started at about 10 a. m. and ceased about 3 p. m. He came in the next morning about 10 o'clock free from pain, and I tried to douche sinus; while I was working the neuralgia suddenly appeared, and in spite of everything I did it grew worse until 3 p. m., when it ceased. He tried hot nasal douches over Sunday, with no relief, and on Monday I again observed the neuralgia develop at 10 a. m., and continue with intense suffering, in spite of local anesthesia, until I gave him a quarter of a grain of morphine for relief. While he was under the influence of the narcotic, I removed the anterior end of the middle turbinate, but as the pain had exhausted him it was impossible to douche the sinus. He returned the next morning, and at the same time the neuralgia began, but before it became too intense I washed out the sinus, getting a very thick plug of muco-pus, brownish-gray in color. The instant this came out he exclaimed that the pain was gone and his head felt many pounds lighter. The sinus was douched daily for about ten days; the secretion at first was thin yellow pus, which rapidly disappeared. No neuralgia after the plug of muco-pus was removed.

Mrs. W. H., aet. 30, American. Has had coryza for couple of weeks (first time in seven years), which for the last week has caused daily attacks of neuralgia, starting about left frontal sinus and extending to other branches of the trigeminal nerve. Begins about 9:30 a. m., stops at 4 p. m. During the rest of the twenty-four hours does not feel that she is sick. Considerable swelling in the region of the frontal duct, with some pus. Cuprenalin and nasal douche for twenty-four hours gave no relief. Great frontal tenderness; dark on transillumination. I removed the anterior end of the middle turbinate but could not get into frontal sinus. Soon after, there began a discharge of thick tenacious muco-pus, and she had only a slight neuralgia on the second day for a few hours. The frontal discharged muco-pus for two weeks, and she was well in four weeks.

L. R., aet. 16, male. December, 1906. Has had at intervals considerable frontal headache for several years. Now has had cold in head for about one week. This morning had a chill, followed by a temperature of 105°, pulse 135, with much pain and tenderness over left frontal sinus. Examination revealed membrane in region of frontal duct much inflamed, with some pus. Transillumination showed right frontal light, left dark, antra light. Enlarged cervical gland at angle of jaw. Saline douches preceded by adrenalin ordered every two hours. I also attempted to inject adrenalin into frontal duct. The temperature dropped to 99 4-5° the next morning, but again reached 105° at 3:30 p. m. Tried to wash out region of frontal duct. 11:30 p. m., temperature still at 105°. I removed part of middle turbinate with considerable difficulty on account of a deviation of the septum, but could not get into frontal sinus. I washed out a large anterior ethmoid cell and the temperature dropped to 103°, but the next morning the temperature was climbing again, 104°, continuing to 105°. I decided to open the sinus externally.

Blood Count by Dr. Sondern; December 6, 1906. Number of red corpuscles in 1 cmm. 5,010,000; uniformly normal in size. Leucocytes, 25,500. Differential count based on percentage in 500—small lymphocytes, 11.6 per cent; large lymphocytes, 4.8 per cent; polymorphonuclears 81.6 per cent; eosinophiles 2.0 per cent. Haemoglobin 88 per cent, color index 0.88; no plasmodia found. Note: The noteworthy features in the specimen are, the decided leucocytosis as stated, with a considerable increase in the relative number of polynuclear cells on differential count.

At 4 p. m. I opened sinus through usual Killian route, found sinus full of pus under considerable pressure; the lining membrane necrotic and easily lifted away from the bone. The sinus was rather large. There was a large ethmoid cell with a very thin bony wall that pressed upward into the frontal where the naso-frontal duct should be. It was impossible to pass a probe by the cell into the nose; the frontal was entirely shut off from the nasal cavity by this cell, which when broken into immediately led into the nose. This cell was filled with a mucoid material that might suggest a cyst. Some of the ethmoid cells were removed for drainage, and the wound closed. The temperature came down gradually, striking normal on the third day. Seven weeks later, entirely well.

This patient has hay fever, and during the attacks in June, 1907 and 1908, the eyelid and where the anterior sinus wall was removed, would puff out in an alarming way. This condition rapidly subsided with applications of ice and pollantin in nose.

November, 1908. He presented himself with a swelling in centre of forehead two inches in diameter, and also one about the sinus that had been opened two years previously, with oedema of the scalp extending back to the occiput. The old frontal incision was opened, and about one ounce of pus evacuated (pure streptococcus infection) from forehead; left sinus cavity filled with pus. The bony partition between frontals was bare, necrotic, and perforated. The old cavity everywhere else was well covered with fibrous tissue. The bony partition at time of first operation was perfectly solid, though denuded of membrane. When the necrotic bony partition was removed it revealed the membrane of the right sinus to be in a thickened polypoid condition, bathed in pus. The fronto-nasal duct was small and situated rather posteriorly. A very interesting condition was found in the left sinus—which when operated upon two years before had had the bony orbital wall removed, which was in relation to the floor of the frontal and external to ethmoids—namely, that this bone had been reproduced, thin, smooth, and hard; also that the sinus had been obliterated down to the level of the fronto-nasal articulation.

The purulent cavity was drained, and on December 3rd, the right sinus was cleaned out and drained into the nose, all the floor removed, also all the bony partition between sinuses, but the anterior wall was left in place to support root of nose. Incision closed. On January 5th, returned to school well.

L. P. H., German, aet. 50. For three years past has had recurrent head colds, frontal and occipital headaches; extremely nervous, lack of mental application, feels mentally dull and fatigued; for last eight weeks some gastric derangement; at present on the border of melancholia. He has a chronic diffuse nephritis with arterial sclerosis. Most of the above symptoms were attributed by the family physician to the sclerotic processes. Three years ago spur removed; two years ago anterior end of middle turbinate removed, also some polypoid tissue around the frontal duct. Examination showed reddened nasal mucosa, purulent secretion about the frontal duct, slight septal deviation, anterior portion of middle turbinate gone. Necrotic bone on the posterior wall of frontal duct. Considerable pus in frontal sinus. Some granulations about the sphenoidal sinus orifice. Dark on transillumination. X-ray plate plainly shows disease of frontal and ethmoids. The frontal could easily be entered with a large probe or canula, and the sinus was douched two hours before operation with the idea of reducing infection. Typical Killian operation performed. When the anterior wall was opened, the pus was found under pressure; the lining membrane was very thick. The previous introduction of the canula had left a bloody tract through the membrane and had washed out only the purulent secretion along its sides, and had relieved the sinus of neither pus nor pressure—clearly showing how little good is done by douching a sinus when the membrane has become much thickened. There was a small spot of softened bone on the posterior sinus wall near the orifice of the nasal duct. All the ethmoids were removed. Six weeks later the nose was free from secretion and entirely healed. The mental and nervous symptoms passed away within three months, and now,—three years later,—he is an apparently healthy man, notwithstanding his arterial sclerosis.

Mrs. O. H., German, aet. 45. August, 1904. Previous history negative. No syphilis. Eight months ago had grippe, high temperature, dizziness, and intense pain about the frontal sinus. Since then has had headaches, and pus in one side of nose. Two months ago had a swelling about one inch in diameter appear on forehead, about one inch above the eyebrow. This was incised, but refills as soon as the skin heals. It evidently discharges into the frontal sinus, because she says when pressure is put upon the swelling, it diminishes in size and there is a purulent discharge from that side of the nose.

Examination reveals purulent secretion about the frontal duct. Left frontal and antrum dark on transillumination; right sinuses clear. There is some fluid in swelling on forehead, but she was not able to squeeze any out into nose. I removed anterior end middle turbinate and washed out the frontal sinus which contained a small amount of cloudy secretion. This was in August. The sinus was douched every other day and a strong solution of silver nitrate injected. The swelling disappeared, and in January, 1905, was absolutely well. One year later there was a slight infection of the frontal and antrum, lasting five weeks, but the swelling on forehead did not reappear.

Captain C., aet. 49, Italian. When first examined his two frontals, ethmoids, and antra were all secreting considerable pus, the history of which dated back seven months. Much frontal pain, headaches, vertigo. An endeavor was made to relieve the condition by removal of the middle turbinates and as many of the ethmoid cells as could be reached. While under treatment for some three months, he developed an acute otitis and mastoiditis, which required operative procedures. During all this time he complained of a great deal of frontal pain, with considerable discharge of pus from the frontals. remaining ethmoids, and sphenoids. Two months after mastoid operation and during the fifth month of observation it was decided to open the sinus externally and remove all diseased tissue. This was done on the right side. Two days later he developed ether pneumonia and died on the seventh day.

At autopsy, besides the lesions of septic pneumonia; the brain was removed, which was normal; the dura was normal, except that it was slightly adherent to the region corresponding to the posterior and external wall of the sphenoid sinus. The bone beneath was salmon colored and soft. The cribriform plate and superior wall of the frontal sinus was removed. The operative area contained no pus, but simply some thick blood mixed with mucus.

This case shows the danger of conservatism in such condition though the excess of pus drained from the sinuses. A radical procedure should have been done long before. If this man had not unfortunately developed pneumonia, and had lived, would the softened bony walls of the sphenoid sinus have taken care of themselves, or would they have later produced inflammatory changes of the meninges and brain?

Mrs. C., Scotch, aet. 40. Duration of sinusitis, six years. Had antrum opened through tooth socket four years ago in Glasgow,

also all the teeth on that side extracted. Is still wearing hard rubber plug in alveolar opening. Washes out antrum twice daily. Has considerable frontal pain and headaches. Examination reveals middle turbinate removed, also some of the ethmoids; pus is exuding from frontal, ethmoids, sphenoid, and from alveolar opening into antrum. No vertigo. Probe passed into frontal sinus encounters necrosed bone in frontal duct. Dark on transillumination.

Operation (Killian). Frontal sinus filled with thickened mucosa and pus. When this was removed, the fronto-nasal duct was found to be necrosed until it was as large as the little finger. There were no bony septa in the frontal sinus, yet in spite of the large opening into the nose the thickened mucosa prevented drainage. The ethmoids and anterior sphenoidal wall removed; behind the anterior ethmoidal vessels the bony wall of the orbit was necrosed away about one-third of an inch in diameter, but not through the periosteum. The alveolar antral opening was curetted, and closed within one week.

The point of special interest in this case was the large communication between the frontal and the nose, yet the conditions were such that she had pressure symptoms in frontal sinus.

15 East 48th Street.

Cancer of the Ear. L. MAHLER. *Ugeskrift for Leeger*, 1906, p. 817.

Carcinoma auris in a woman of fifty-eight. The swelling occupied all of the posterior wall of the bony auditory canal, and from there it had spread to the mastoid process and to the tympanic cavity, producing facial paralysis. Chiseling out, curetting and Roentgen-ray treatment were resorted to, but fatal termination quickly followed. KIAER.

REPORT OF A CASE OF DEEP CERVICAL ABSCESS FROM STRICTURE OF THE ESOPHAGUS, AND REPORT OF A CASE OF PURPURA HEMORRHAGICA, WITH ABSCESS OF THE DEEP CERVICAL LYMPHATICS.

BY JOHN J. KYLE, M. D., INDIANAPOLIS, INDIANA.

These two cases contain many points of interest. Though differing somewhat in etology, symptomatology and pathology, the cause of death in both cases, was quite the same. The termination of these cases emphasizes the danger of deep cervical abscesses.

The first case, diagnosed as deep cervical abscess from stricture of the esophagus, was a young man seventeen years of age, a laborer by occupation, who was first seen the evening of December 29th, 1908, and appeared to be moderately well nourished. The patient presented himself at the City Hospital for relief, complaining of pain in the throat upon talking and swallowing. He said that on December 27th, while eating a piece of pork, a small bone had become lodged in the throat, and he could distinctly feel the obstruction, which he wanted removed. He said he had had trouble in swallowing for a long time, but the last trouble began three days before coming to the hospital, and since the obstruction had lodged in the throat, nothing, not even water, had been swallowed.

Physical examination was negative. The patient was placed on the operating table, with shoulders elevated and head hanging slightly over the edge of the table. After anesthetizing the throat with a twenty per cent solution of cocaine, the tube speculum was passed into the larynx and the throat carefully examined for the presence of a foreign body, but nothing could be detected. The history was such as to preclude the presence of a foreign body in the lung, and in consequence of this we endeavored to do an esophagoscopy, presuming the foreign body to be lodged deep in the esophagus. Just below the mouth of the esophagus, a cicatrical band was encountered which prevented the passage of the esophagoscope. We endeavored afterward to pass a very small bougie into the esophagus, but without avail. Before removing the patient from the operating table, however, he said he felt that the foreign body had been dislodged, though he could swallow no water. The next day the patient complained of inability to swallow and pain and distress in the throat. I called Dr. Alois Graham in consultation, presuming

that there was something wrong with the technique of my examination. It was decided to allow the patient to rest quietly in bed with hot applications to the throat, hoping the irritation caused by the examination might pass away and that in a few days we could again endeavor to remove the foreign body. The patient's temperature varied from normal to 101°, which continued for the second and third day, when it gradually dropped down to slightly subnormal on the fourth day, but on the fifth day it rose as high as 100° dropping down in the morning to 98°. On the morning of January 4th, the patient suddenly began to suffer from distress in breathing, which was progressive in character. This continued in severity and about eleven o'clock a tracheotomy was performed, which, however, was too late, and the patient died of strangulation.

Post-mortem examination showed the trachea to be free from any foreign body. Exposure of the thoracic cavity showed nothing abnormal. In the effort to remove the esophagus a quantity of foul-smelling pus was found in the superficial cervical fascia, having also burrowed deep into the cellular tissue of the neck. The lumen of the esophagus was completely obliterated for a distance of one and one-half inches, beginning near the mouth and extending downward, probably due to an acute infection of an old cicatrix. The inflammation was probably due to infection produced from the esophagus, and death probably resulted from paralysis of the abductor fibers of the larynx from the presence of a deep cervical inflammation.

The second case, diagnosed as purpura hemorrhagica with cervical abscess, was that of an infant eight months old. Two weeks before coming under observation, the child suffered from tonsillitis from streptococcic and pneumococcic infection. The attack was comparatively light in character, and in two or three days the fever had entirely disappeared. Following the infection the deep cervical lymphatics on both sides became infiltrated. These continued quite large and tender to the touch. Two weeks after the primary attack of inflammation, a sudden hemorrhage was manifested, exuding apparently from the right tonsil. The hemorrhage was not profound at any one time and I presume the trouble resulted from the evacuation of a tonsillar abscess. Upon examination of the throat I could detect no special discoloration of the fauces and only a slight enlargement of both tonsils. A slight smearing of blood appeared over the right tonsil. However, the following day the hemorrhage in the throat became worse, and at the same time there developed

a very large hemorrhagic extravasation, superficially and above the clavicle of the right side, producing swelling and stretching of the skin, and there also appeared ten or twelve small extravasations in the skin, not being limited to any one part of the body, but occurring on the scalp, trunk, arms and legs of the child. After the second day, the hemorrhage from the mouth seemed to have stopped. For a day or two before the hemorrhage from the throat, the child was restless and suffered a slight rise of temperature, which, later on, varied from normal to 103° per rectum. After four or five days, the supraclavicular hemorrhagic extravasation on the right side began to undergo pus formation, and the pus sac was evacuated. Soon two or three swollen lymphatic glands on the opposite side began to increase in size and become soft to the touch, showing the presence of pus. The day before the child died, and four weeks from the beginning of the tonsillar infection, a laryngeal stridor was manifested, very faint at first, with copious accumulation of mucus in the throat. It was presumed that the presence of the swollen lymphatic glands was producing some irritation of the abductor fibers of the larynx, and immediate evacuation of the glands of the left was recommended. Soon after evacuation, the laryngeal stridor continued with exacerbation of the bronchorrhea, which in a very few hours ended fatally, probably by producing a bilateral recurrent laryngeal paralysis, especially paralysis of the abductor fibers.

No. 226 The Newton Claypool Building.

A Third Case of Paralysis of the Abductor from Purulent and Acute Middle-ear Otitis. L. TOMMASI. *Annali Italiana di Laringologia e Otologia*, No. 6, 1908.

The author has had occasion to study a third case with morbus syndroma of Gradenigo. The patient had pains at the A. D. with suppuration and tumefaction of the mastoid region, and amblyopia from paralysis of the sixth nerve on the right. When subjected to antrectomy, nothing was found that could explain the ocular lesion, but it may be that a neuritis existed, as happens in many cases of infectious diseases. LASAGNA.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, May 20, 1909.

HARMON SMITH, M. D., Chairman.

PRESENTATION OF PAPERS.

SYMPOSIUM ON INTRA-LARYNGEAL CARCINOMA.

Clinical Diagnosis and Operative Procedure, from the Standpoint of the Laryngologist. By CHEVALIER JACKSON, M. D.
(Published in full in this issue of THE LARYNGOSCOPE).

Histological Diagnosis and Pathology. By JONATHAN WRIGHT, M. D.
(Published in full in this issue of THE LARYNGOSCOPE).

Operative Procedures from the Standpoint of the General Surgeon. By GEORGE E. BREWER, M. D.
(Author's abstract published in this issue of THE LARYNGOSCOPE.)

PRESENTATION OF CASES.

Three Cases Operated Upon for Cancer of the Larynx. By GEO. E. BREWER, M. D.

I present these cases as bearing upon the subject of the papers of the evening.

Case I. The first patient was a man of fifty years of age, who, when he first came under treatment, had suffered from hoarseness and cough for many months. On the left vocal cord was a growth occupying the entire middle of the cord. Five years and eight months ago I performed a thyrotomy, and removed the growth. The man made a satisfactory recovery, but came back two months later, with what appeared to be a recurrence. A second thyrotomy was performed and the growth removed to the anterior commissure, and a portion of the cartilage was also removed. Microscopic examination of the second specimen removed showed it to be only granulation tissue. The man now speaks with a fair degree of distinctness. He was examined carefully a few weeks ago, showing no signs of recurrence, and is perfectly healthy.

Case II. The second patient was referred to me three years ago by Dr. Jonathan Wright. He had an intralaryngeal growth

springing from the left vocal cord, but it did not involve the arytenoid or cartilage. This patient was subjected to a thyrotomy, the growth was removed, and he made a satisfactory recovery. Nine months later he returned with a recurrence involving both sides of the larynx, and a total laryngectomy was performed. It is now three years and three months since the second operation was performed and the man is in perfect condition.

This was a case of recurrent carcinoma involving both sides of the larynx. The gland and the entire recurrent growth were removed, and the patient is to-day in perfect health.

Case III. The third patient was presented before the laryngological section ten years ago. This patient had had three operations, the first performed by Dr. Ard, of Plainfield, who discovered a small growth on one of the vocal cords, which looked like a benign papilloma. This was removed, and Dr. Ard was so satisfied that it was benign that he did not have it examined until the patient returned six months later. He then had this laryngeal specimen examined, and it was pronounced to be epithelioma. The case was then referred to me for a thyrotomy. I operated, removing the growth and all the soft parts in its neighborhood; the patient recovered, and returned to her home in Plainfield. Four months later I was sent for in haste to go to the Muhlenberg Hospital, and found the patient suffering from a recurrent growth, which almost filled the larynx. I performed a tracheotomy, which relieved the patient, and then asked her whether she would prefer to wear a tube, which would give her only temporary relief, or an operation which was attended with much danger, but which offered a chance of cure. She adopted the latter alternative, and a complete laryngectomy was performed on one stage. This was done ten years and eight months ago, and there have been no signs of recurrence since.

Dr. Chappel said, I am sure the section is certainly much indebted to the chairman for securing so able a coterie of men to present this very interesting subject before the Academy, and the members were certainly proud of the manner in which Dr. Jackson has presented his subject and the results he has achieved, for he has proven that the laryngologist may become expert in this question of surgery.

Dr. Brewer, although very modest, is an accomplished general surgeon, and has taken special pains to perfect himself in these operations. Both men are of the type suggested some years ago by Dr. Delavan, who had said that no man should undertake this work unless he specially prepared himself.

During the winter one of our members made the statement that he had removed the larynx five or six times, and that all the patients had died. He further said that he never took longer than fifteen minutes to remove a larynx. I have since regretted that I did not at the time challenge this statement. I have seen this operation performed a number of times by the most accomplished surgeons in the city, but have never seen it done in less than half an hour—usually longer. It could not be done in fifteen minutes if proper consideration is given to the patient's life.

After hearing one of Dr. Wright's papers I am always freshly impressed by a realization of how little I know of the pathology of the larynx.

In regard to the question of early diagnosis, I feel that this one point has not been sufficiently emphasized. We cannot have early diagnosis unless the medical colleges teach surgery better than they have done in the past. We cannot do better than to enter a plea to all the colleges to raise their standards in this respect, for every student should be able to examine the larynx with some intelligence, and to know whether the conditions are due to a hardness or to thickening, or to a tumor. If this is done we will be able to get better and earlier treatment.

I do not feel that I can add anything to what had been said on the subject of treatment. The late Dr. Bull operated on three cases for me, performing complete laryngectomy, and in all cases prepared the patient for three or four days previously by extra feeding: after the operation he allowed nothing to pass the lips for eight days. He was very successful in his results.

DR. DELAVAN said:

MR. PRESIDENT—I wish to bring forward a proposition. I offer it with much regret, but I offer it in the hope that it may ultimately be contradicted, and because present conditions seem to make it necessary that it should be thoroughly realized and understood.

After much study and observation of this subject I am compelled to believe *that operations in general for the cure of carcinoma of the larynx have, in the aggregate, materially lessened the sum total of the duration of human life.*

In other words: It is said that the average duration of life in cancer of the larynx after the disease has developed sufficiently to cause dyspnea and the patient has been tracheotomized, is about one and a half years.

Granting this estimate to be reasonable, it is fair to assume that the average duration of life after the disease has become discoverable in the larynx would be about two years.

A patient operated upon in the early stages of the disease must therefore live for two years after operation in order to equal the time which he would have probably lived without operation. A patient dying as a result of operation would represent on the average a loss of two years of life. Ten patients dying shortly after operation would represent an average loss of twenty years of life.

Very few patients have survived operation for more than three years, although isolated cases are on record in which the patient has lived for more than ten years. The number of such cases is infinitely small when compared with the sum total of operations performed.

If all results of operation were frankly published, bad as well as good, my proposition would be found to be absolutely true.

In the wording of the proposition the expression "operations in general" for the cure of carcinoma of the larynx, is meant to include all external operations applied to this purpose and to include all cases, no matter what period of the disease they may represent. This becomes necessary because at the present time it is seldom that advanced cases are operated upon, the large majority of operations being done earlier rather than at the later stages of the disease.

Indiscriminate operating upon the larynx must inevitably result in unnecessary mortality, while the universal refusal of operators to report any but their successful cases leaves us in entire ignorance as to the extent of the mortality, and therefore makes it impossible for us to know whether or not such operations are justifiable.

It is encouraging to hope, however, that the excellent example of the two gentlemen who have addressed us this evening together with that of a few others here and in Europe may be appreciated, and that the present unfortunate statistics may be improved in general, as they have improved them, by properly directed effort in diagnosis and in the operative detail of the work and by truthful accuracy in the reporting of it.

In closing the discussion Dr. Jackson said I have nothing further to say on the scientific side of the subject. I came here to-night to learn something, and have learned a great deal. I fully agree with what Drs. Wright and Brewer have said. I also think Dr. Delavan was quite correct in what he said about operating on late cases. If you operate in cases where it is no longer a local disease, you are going to shorten life.

TORONTO ACADEMY OF MEDICINE.

SECTION OF OPHTHALMOLOGY, OTOLOGY AND LARYNGOLOGY.

February, 1909.

DR. D. J. GIBB WISHART, Chairman.

ABSTRACT OF PROCEEDINGS, WITH EXHIBITION OF CASES.

CASES SHOWN BY PERRY D. GOLDSMITH, M. D.

1. Epithelioma of the nose in a middle aged man. The growth protruded from each nostril. The doctor proposed to do a Rouge operation as a palliative measure.

The chairman was under the impression that operation would be followed by quick return.

Dr. Stewart had seen three similar cases while acting as House Surgeon. He thought that operation would be followed by recurrence within a year.

2. Perisinusitis in a girl aged twenty in which free drainage had been secured by intra-nasal operations. There remained some discharge from frontal sinus, which irrigation and antiseptics failed to cure. Dr. Goldsmith did not feel justified in risking disfigurement by further operation.

The chairman suggested the injection of tincture of Iodine into the sinus. He had used it with good results in similar cases.

Dr. Ryerson said that to leave it alone met with his approval.

3. A patient operated on for Mastoid disease with successful healing over a blood clot. He did not, however, advocate this as the best method of treatment, although attended by a good result in this case.

CASES SHOWN BY DR. GIBB WISHART.

1. One in which Killian's operation for frontal sinusitis had been done. A radical antrum operation and submucuous resection of septum also were done in this case; the combined operations and treatment resulting in cure of symptoms and cessation of discharge.

2. This was one that had been shown at a previous meeting and diagnosed as prolapse of the laryngeal ventricle. Under direct laryngoscopy a portion of the tumor was removed and examined. The pathologist reported it as papilloma. There is still redness and thickening above the cord but hoarseness has improved.

Dr. Gilbert Royce showed a case of meningitis of Otitic origin. Operation and recovery.

This patient had had a discharging ear for two years. He presented himself at the hospital with the symptoms of intense pain in the head with dizziness, together with pain and stiffness in the neck. Temp. 103°, pulse 110 and weak. On examination the neck was rigid, the eyes showed internal strabismus and the discs were blurred, the left more so than the right. There was horizontal nystagmus, most marked when looking away from the diseased side (left). He could not raise the right arm above his head. There was no mastoid tenderness, but a thin foul discharge flowed from the left ear, the fundus of which was crowded with granulations.

A radical operation was done and neurotic bone traced in from the sinus toward the posterior semicircular canal. On retracting the dura, pus flowed from between it and the bone. A gauze drain was inserted and the ear dressed. The patient made an uneventful recovery. The canal is now dry and the hearing, which was very poor before the operation, is now, watch, 4 inches, whisper, 5 feet.

Dr. Royce also exhibited a new tonsil grasping forceps, devised chiefiy to assist in the operation for the removal of buried tonsils. The handle is so made that when the instrument is locked on the tonsil, a snare or a tonsillotome can be passed over the forceps without removing it. The jaw is fenestrated and devoid of projecting teeth or claws, so that when the tonsil is grasped the instrument will not pull off.

MEETING OF SECTION.

March, 1909.

DR. D. J. GIBB WISHART, M. D., Chairman.

CASES IN PRACTICE.

1. One of nasal carcinoma presented for the second time by Dr. Perry Goldsmith. This case was shown at the last meeting. Since then Rouge's operation had been done. Very evident intra-nasal disease was found and the structures removed. Disease was also present in the floor of the nose. The hemorrhage accompanying the operation was very severe. For the ensuing two weeks the patient was free from pain and had good respiration. Then within twenty-four hours the nose filled up again, the growth protruding from each nostril. The patient said that he could see it growing. The doctor said that he proposed to operate again and to use Coley's fluid.

Dr. Price Brown said that the prognosis being very bad, he would advise against further operation. In a case of sarcoma of the maxillary antrum he had first removed the affected side of the jaw; and then treated by electro-Cantery and Coley's fluid. In this case, while the Cantery had a good temporary effect; he thought the fluid aggravated the disease. The reactions were so strong that they seriously weakened the patient, and perhaps hastened the fatal issue.

Dr. Stewart would not operate. He thought that X-rays might be of benefit.

The Chairman thought the wisdom of further operation very doubtful. Possibly X-rays in Finsen light might relieve.

DR. PRICE-BROWN PRESENTED

1. A case of Phantom tumor of the neck. The patient, a young lady aged twenty-six, has had a variable tumor in the central thyro-hyoid region ever since childhood. It is soft and gives no pain. She says that in deep inspiration she can feel it empty itself as though air were escaping, as it disappears completely between the two sterno-cleido mastoid muscles. On forcible expiration it comes out and becomes distended again. The observer can follow its recession with his fingers, and with slight pressure can prevent its protrusion during expiration.

The doctor was inclined to believe that it was an incomplete internal fistula of the second Branchial cleft, which became distended during expiration. He could find no similar case reported so far as the phantom character was concerned.

Dr. Boyd thought it was a case of cystic goitre which during inspiration became substernal. There was no cracking such as one gets in an air tumor. The tension is that of a cystic goitre. If it contained air he thought this could be seen by laryngoscopic examination.

Dr. Stewart thought it might be a cyst of the thyroid gland. It was too high on the neck to be a thymus.

The chairman noted no sounds over the tumor apart from those of the trachea. If open to the throat he thought secretions would appear later. He favored the idea that it was a cystic tumor of the thymus. Did not think it contained air.

Dr. Price Brown in reply said, that, as the tumor disappeared entirely with deep inspiration, and protruded prominently with forced expiration, coupled with the statements of the patient, that she could always feel air escape during the former, and at the same

time feel more comfortable during the act, he still was of the opinion that the tumor was an air sac with thickened walls, subject to alternate expansion and contraction.

2. A male patient aged thirty-five, upon whom he had done a tracheotomy six years ago for the relief of stenotic infiltration of the larynx, due to tuberculosis. The apices of both lungs were at that time affected as well as the larynx; but a summer's sojourn in Gravenshurst Sanitarium had benefitted the former. The man's weight had greatly increased, cough had subsided, and tubercle bacilli had almost disappeared from the sputum. The infiltration, however, increased and cyanosis developed. Finally the physician in charge referred him back to the doctor for operative relief; and he opened the trachea and inserted a tube which the patient was still wearing. After the operation the cough subsided and finally disappeared. As he regained strength, he returned to his regular employment in a piano factory—which he has been following now for the last five years.

Dr. Trow asked if the patient had ever had syphilis?

Dr. Stewart asked if T. B. were now present in the sputum? He stated that he had only seen one case similarly operated upon for tuberculosis of the larynx. At the Golden Square Hospital, the practice of operation in these cases was not approved of.

Dr. Hunter said that the case was remarkable, inasmuch as the pulmonary trouble had not been aggravated by the mixed infection that was likely to have occurred through the permanent cut; and also that the dry air inhaled directly into the lungs had done no harm.

Dr. Goldsmith thought that tracheotomy had acted by giving rest to the diseased larynx. Evidently both larynx and lungs had recovered.

The Chairman thanked Dr. Price Brown for exhibiting this rare and interesting case, which though he had heard of, he had never seen before.

In reply Dr. Price Brown said that the man never had syphilis. Although T. B. had at one time been abundant in the sputum, for a long time now there had been none. He agreed with Dr. Goldsmith in the idea that it was a case of rest cure combined of course with tent life and good hygienic conditions.

3. This was the case of a young man, previously shown before operation for deviated septum; and now shown after cure by means of the H. operation. The patient had been a mouth breather from

childhood, with curve of the septum to the right. It was attached to the inferior turbinal and completely filled the passage. He showed the case in protest against the indiscriminate operation by submucous resection, as in a similar case previously exhibited.

Dr. Goldsmith objected that the septum was not quite straight. A patient who wore a splint thirty-five days deserved a better result. A submucous resection was complete in a few days.

Dr. Stewart said that a good deal of right inferior turbinal had been removed and the septum was not in the middle line.

The Chairman admitted that the man had now very good breathing on both sides. He was not tied to the submucous resection; but believed it was the better plan.

Dr. Bell thought there was dryness on left side due to too great space; and that the right side could not remain free much longer.

Dr. Price Brown in closing said that although the septum in this case was not exactly in the middle line, it was so nearly, that the patient, as stated by the chairman, had very free breathing on both sides. The objection to wearing a rubber splint was not a valid one. After the first two or three days it created no distress, and after the first week the patient was able to discharge his ordinary duties without discomfort. The splint was aseptic, could be cleansed readily, and it kept the flaps of the septum in position until healing took place. The statement made by one of the speakers that a good deal of the right turbinal had been removed was not correct. No part of it had been removed by operation. The turbinal body had shrunk away by pressure from the displaced septum. The statement made by another speaker that the right cavity would soon fill up again was a fallacy. It would never fill again. The septum as replaced would remain in situ and would be much better for the patient than if the cartilage had been resected away.

Sypnosis of Paper Upon "the Larynx in Voice Production." By Alexander Davies, M. D.

While the art of voice production was cultivated extensively by the ancient Greeks, the science of the art only began with the advances of Anatomy and Physiology about the middle of the 18th century, when experiments were carried on by Ferrein and Hempelen and later by Lebfeldt, Magendie and Mueller.

Various attempts to view the larynx in tone production were made by many observers, the first account of a laryngoscope being given in 1743 by M. Levral. But to Signor Manuel Garcia in 1854

fell the honor of showing to the world the true value of the laryngeal mirror. His observations were treated with considerable indifference in England; but Prof. Tuerck of Vienna and Czermak of Pesth became possessed of the importance of these observations and soon effected a revolution in the investigation and treatment of laryngeal diseases.

Much has been demonstrated by Dr. Lennox Browne and Prof. Emil Behnke and others in photographing the larynx during the various movements in the production of tone. One observes that in breathing the glottis is widely open, the arytenoids being held apart by the action of the post. crico-arytenoid muscles, the latter contracting more vigorously on deep inspiration. On attempting phonation, the pyramids are brought rapidly together by the action of the arytenoideus-transversus and obliquus, and their processes rotated inwards by the action of the lateral crico-arytenoideus muscles, the external thyroarytenoid also takes part in this sphincter action. It will be noted that the ventricular bands in a state of health never meet in phonation. Tone is produced by the vibration of the elastic vocal ligaments. This is the primary sound but not the human voice in its entirety, for this is markedly influenced by the condition of the adjacent resonating cavities of the chest, ventricular pouches, pharynx, mouth, nose, etc. What makes a voice rich and grateful to the ear is the abundance of overtones or harmonics. It is the harmonics which give to a voice its color or timbre.

The writer then went on to describe in an interesting and exhaustive manner the registers of the voice, quoting Sir Morell Mackenzie, Prof. Emil Behnke and Griffiths of Liverpool as authorities, concluding in the words of Foster: "The power to sing is determined not by the build of the larynx, but by the possession of an adequate nervous mechanism, through which finely appreciated auditory impulses are enabled so to guide the impulses of the will, that these find their way with sureness and precision to the appropriate muscle bundles."

Dr. Stewart congratulated Dr. Davies upon taking up a neglected subject. He had noticed how singers controlled the larynx. He had had the privilege of examining Manuel Garcia's larynx when he was ninety-one years of age, and was struck by the perfect control of the organ which he exercised.

Dr. Trow also congratulated the writer of the paper.

Dr. Boyd recollected a freak who could whistle with her larynx. Examination of her vocal cords, while in the act of whistling showed the cords in the position of the small register.

The Chairman felt that the laryngologist and the singer must draw closer together.

Dr. Davies closed the discussion.

INSTRUMENTS SHOWN.

Dr. Stewart showed a new intranasal maxillary antrum trephine. In using it the patient must be under a general anesthetic, but it is an advantage to use cocaine first, as by the shrinkage it produces, more room in the nose is obtained for operation. The instrument is then passed through a speculum, (a Thadicum preferred) so that it rests on the floor of the nose about half an inch behind the anterior end of the inferior turbinal. By pressing forcibly outwards, and moving the handles of the instrument in the arc of a circle, a button of bone is forced into the antrum. The button is easily removed by curved forceps. If, however, an opening has also been made in the canine fossa, the button may be removed by that route. The shank of this instrument is purposely small, so as to allow a good view into the nose. It is also slightly curved so as not to interfere with the anterior end of the inferior turbinal. The instrument is reversible, so will answer for either side of the nose.

Both the glass tubes and the trephine were made by the Hartz Co.

Dr. Stewart also showed glass meatal tubes for mastoid operations. Two sizes were shown but any size required might be obtained. After radical mastoid operation, a good size to insert would be of outside diameter one-half inch with length three-fourths of an inch. Later on the size may be diminished to one of outside diameter of two-fifths of an inch.

Advantages:

1. Tubes are clean and easily sterilized.

2. Their removal is painless. They do not stick in the wall of the canal like gauze or rubber.

3. If the larger one is worn for a fortnight, it may then be discarded and the canal will likely remain large enough for the rest of the after treatment.

4. They tend to keep the flaps in place.

5. There is no danger of them breaking as they are made of thick glass with rounded edges.

Dr. Wishart showed an extension tube with needle curved at right angles, attachable to a Killian Submucous Syringe for use in

tonsil resection under local anesthesia. The curve of the needle permitted the solution to be injected with great accuracy into the anterior and posterior pillars and supra-tonsillar fossae.

MEETING OF SECTION,

April, 1909.

DR. D. J. GIBB WISHART, Chairman.

CASES IN PRACTICE.

DR. BOYD showed a case of bilateral fronto-sinusitis, which had been previously opened through the floor. Nasal operations had also been done, which failed to cure. Upon the patient he had done a Killian with good results.

DR. GOLDSMITH congratulated the operator upon the result, the deformity being slight.

DR. R. A. REEVE remembered treating this case twenty years ago, when the man was suffering from periostitis of left orbital ring.

DR. CHRISTIAN HOLMES of Cincinnati, who was the guest of the evening, said that the cases in which there was doubt whether frontal sinusitis existed or not, we might explore. Intra-nasal operations were useful, but not knowing the number or location of cells opening into the middle meatus, we need to open externally to make sure. He used a small exploration trephine. We should also remember that syphilis sometimes complicated this disease.

DR. PRICE-BROWN exhibited a male patient, aged 35, referred to him three weeks ago by Dr. Kerr of Toronto for treatment of sarcoma of the nose. At that time left nasal passage from anterior to posterior naris was filled by a dark dense growth, causing complete nasal stenosis. The tumor bled on being touched. The senses of smell and taste were gone. The growth did not extend at all into the post-nasal space. A section being removed, it was examined by pathologists, who declared it to be a round-celled sarcoma. The doctor had removed the tumor piece by piece by electro-cautery operations, according to the method he usually followed in these cases. The operative treatment had been over for a week, and the patient was practically well, with free respiration through each nostril. The senses of smell and taste were both returning.

The chairman asked how deeply the cautery was applied and what kind of a blade was used?

DR. HOLMES, while he approved of electro-cautery, and also of caustic treatment in some of these cases, drew attention to the possibility of mistakes in diagnosis—syphilis resembling sarcoma pathologically. He mentioned cases where such mistakes had been made. Sarcoma of the nose undoubtedly required heroic treatment to be successful.

DR. CUTHBURTSON asked if the use of the electro-cautery snare would not be of material advantage in these cases.

In closing the discussion, Dr. Price-Brown said that he used the ordinary electro-cautery knife, bent at an angle to secure clear vision of the part operated upon. The depth of each cut depended upon the control of the bleeding. The rule was, after applying cocaine and adrenalin, to insert the cautery knife at any point chosen, turning on the current for a few seconds; then to break the connection without removing the knife; repeating the current again, off and on, as long as was considered advisable. Sometimes different parts of the tumor were attacked succesively at the one sitting, the shell of the tumor being the last to be operated upon. The use of the cautery snare, while not contra-indicated, would not be of service in cases of multiple attachments with sessile base. In purely pedunculated cases it might be available. The electro-cautery method deserves the title, heroic, as it entails the facing of many possible hemorrhages, oft-repeated and long continued sittings, great patience and continued watchfulness; but it has, as a reward, a well-founded expectation of a permanent recovery from a terrible disease.

A case of Litrolysin pharyngitis was shown by Dr. Perry Goldsmith.

A man, aged, twenty-eight, was suffering from deafness, due to changes in the middle ear and labyrinth, for which a course of litrolysin (Merck) was being used. After the third injection, which was given every three days, the patient remarked that the medicine made his throat sore, and he asked the doctor to see his throat, twelve hours after the injection. He did so and found an intense inflammation of the pillars of the fauces and lower part of soft palate. There was neither exudation nor swelling. As an injection had been given that morning, the members were asked to examine the throat; which showed indications similar to those reported about the case. The patient, however, was developing a tolerance to the drug, manifested by lessened soreness and inflammation following each successive injection.

DR. GOLDSMITH next showed a case of fistula of semicircular canal in a girl aged twenty years. Chronic suppuration of the left ear had existed nearly all her life, notwithstanding careful treatment by different men. Recently had complained of headache, nausea and vertigo. The latter symptom had become very troublesome, rendering her unable to do her work as a typewriter. Radical operation was done and two fistulae were found in the external semicircular canal. They were left alone. Green pus was found in the cells of the mastoid and antrum. The dura was exposed by following a necrotic line upward and backwards from the antrum. The operation was done five weeks ago. The ear is nearly dry and patient feels much better.

Case of tubercular laryngitis was also shown by Dr. Goldsmith. Man, age thirty-five, has hoarseness of one year's duration. There is a small shallow ulceration along the full edge of posterior part of left vocal cord, but no marked inflamed area of infiltration. Right apex is also affected. Examination of sputum revealed tubercle bacilli, but few in numbers. While from examination of the larynx alone, one might consider the case one of simple chronic laryngitis. Taken with other symptoms mentioned, he believed the laryngeal conditions to be tubercular.

The last case shown by Dr. Goldsmith was one in which submucous resection of the septum had been done. The patient, aged twenty-six, had suffered from nasal obstruction since childhood, caused by a fall. The left nostril was completely obstructed by a crumpled deviated septum, which pressed against the ala. Several years ago some unsuccessful cutting had been done. Three days ago the doctor did a submucous resection. The operation was a tedious and difficult one, but the result, he thought very good. The anterior end of right inferior turbinal had to be removed to permit the partition to come into the center line. There is, of course, more room now in the former deviated side than in the right side, due to the pressure atrophy of the inferior turbinal. This will probably rectify itself in time. The absence of necessity for after-treatment was dwelt upon, closing with the expression that no other method of treatment could produce so satisfactory a result.

Referring to the last of these cases, Dr. Boyd said that Dr. Goldsmith had done the submucous resection in a very satisfactory manner with the prospect of excellent results.

DR. PRICE-BROWN said that the same objection could be made in this case, that Dr. Goldsmith had made in the one after the H. opera-

tion which he, Price-Brown exhibited at the last meeting, namely, that the resected septum was not quite in the center. Another point, the submucous resection had made the nasal cavities too wide. He considered the H. operation, in a case like this as the better one, as it straightened the cartilage and left a strong, firm, permanent septum near the central line. He was fighting for nature when he advocated the preservation of the cartilage.

DR. NEWBOLD JONES said that a new cartilage frequently develops after a submucous resection.

Other papers read:

1. Notes on the newer organic salts of arsenic in syphilis, by Dr. Perry Goldsmith.

2. Notes on treatment of ozena by massage and Argyrol, by Dr. Gilbert Royce.

The proceedings of this section of the Academy then closed by the election of officers for the ensuing year, 1909-1910: For president, Dr. R. A. Reeve; secretary, Dr. Colin Campbell; editor, Dr. J. Price-Brown.

The Diagnosis of Affections of the Labyrinth. C. F. PFINGSTEN. *St. Louis Med. Review*, March, 1909.

This is a valuable and rather exhaustive article concerning the knowledge of this subject derived principally from the work of Robert Barany of Vienna.

"By the presence or absence of nystagmus in relation to affections of the semi-circular canals, we are enabled to diagnose irritations and inflammatory conditions in the labyrinth, * * * not only by a knowledge of the presence of spontaneous nystagmus but by ability to produce nystagmus mechanically or artificially."

The main anatomical and physiologic facts are detailed, and also the diagnostic symptoms of acute labyrinthitis, circumscript diseases of the vestibular labyrinth, latent labyrinth suppuration, and intracranial nsystagmus.

The article is too long for full abstraction. EATON.

BOOK REVIEWS.

Diseases of the Larynx.

By HAROLD BARWELL, M. B. (Lon.), F. R. C. S. (Eng.) Surgeon for Diseases of the Throat, St. George's Hospital; Laryngologist, Mount Vernon Hospital for Diseases of the Chest; Consulting Surgeon for Throat and Ear Diseases, Cripples' Home for Girls. Crown 8vo. 266 pages; 12 plates; 21 illustrations, all original. Price, $1.50, postpaid. Published by the Oxford University Press, American branch, 29-35 W. 32d St., New York.

It is difficult to confine the large and often unwieldy quantity of laryngological subject matter to the confines of a small volume, but this author has succeeded in doing this very well. The two hundred and twenty-six pages of text and illustrations contain the essentials of our knowledge of laryngology to date, and give a fair working knowledge to the student in laryngology and to the general practitioner, of this important field.

Diseases of the Ear.

By HUNTER TOD, M. A., M. D. (Cantab.), F. R. C. S. Aural Surgeon to the London Hospital, and Lecturer on Aural Surgery at the London Hospital School. pp. 317, 18 full-size plates, 15 figures. Second impression. Illustrated. $1.50 postpaid. Published by the Oxford University Press, American office, 29-32 W. 32d St., New York.

This volume of the Oxford medical manuals contains an unusual amount of practical matter, well presented, terse, up-to-date, and selected with good judgment. There are numerous original diagrams and sketches to illustrate the text. It is a splendid little manual for the general practitioner, and contains numerous valuable suggestions for the otologist.

The most striking feature of this little manual is the excellent judgment displayed by the author in the selection of subject matter, and the clean manner of its presentation.

The Hard Palate in Normal and Feeble-minded Individuals.

By WALTER CHANNING, M. D., and CLARK WISSLER, Ph. D. Anthropological Papers of the American Museum of Natural History. Vol. I, Part V. Published by the Trustees of the Museum; August, 1908.

The American Museum of Natural History publishes in its series of anthropological papers this interesting monogram of the Hard Palate in Normal and Feeble-minded Individuals, by Walter Channing, M. D., and Clark Wisstler; this paper discusses measurements made upon cases of the hard palate in living subjects, but these cases are from both normal and feeble-minded individuals, representing by far the largest and most unique accumulation of such material so far brought to our attention. They were systematically collected by Dr. W. Channing, in response to his interest in the much discussed question of correlations between certain variations of the hard palates and feeble-mindedness; a rather detailed study of the two series has been made, with special application to anthropometric methods of this type of anthropological data. The results obtained have been mainly confined to a consideration of differences in the conformation of the osseous structures forming the hard palate.

There is no doubt that such data will assist materially in research work and diagnostic measures in this interesting field of anatomic variations and anthropological study.

Bier's Hyperemic Treatment.

By WILLY MEYER, M. D., Professor of Surgery at New York Post-Graduate Medical School and Hospital, and PROF. VICTOR SCHMIEDEN, M. D., Assistant to Prof. Bier, University of Berlin, Germany. Small octavo volume, 209 pp., 80 engravings. Price, $3.00. Published by the W. B. Saunders Company, Philadelphia, and London, 1908. Second edition, 1909.

In part one of this highly interesting book, the authors set forth the advantages of the Hyperemic Treatment over other methods; the different ways of inducing Hyperemia and give general rules for the application of the system. In part two, they discuss the treatment of special diseases by means of artificial hyperemia in the various branches of medicine and surgery. The attention of our readers is especially called to chapters eight and ten, which treat of the Hyperemic method as applied in otology, rhinology and laryngology. The volume is replete with valuable information, and is an important contribution.

A Manuel of Diseases of the Nose and Throat.

By CORNELIUS GODFREY COAKLEY, A. M., M. D., Professor of Laryngology in the University and Bellevue Hospital Medical College, New York City, etc., etc. Fourth edition, revised and enlarged. Small octavo, 604 pp.; 126 engravings and 7 colored plates. Published by Lea and Febiger, New York and Philadelphia, 1908.

The fact that this popular, compact manual is now in its fourth edition in such a short time, speaks for itself. We note a number of important changes that the progress in the surgery of the nose and throat has made necessary. Special mention may be made on the chapter of deformities of the septum, in which the submucous resection operation is given much prominence and is described in detail. The technique of the radical operation for chronic diseases of the accessory sinuses, has also been carefully revised. The book bears the personal stamp of the author in his suggestions for medicinal and operative measures, and the selection of such methods of treatment as have been found most satisfactory in personal experience. A valuable chapter on therapeutics completes the volume. We are pleased to note, since the review of the first edition of this manual, that it has constantly improved in value, in subject matter, and in the publisher's art.

Diseases of the Nose, Throat and Ear, Medical and Surgical.

By WILLIAM LINCOLN BALLENGER, M. D., Professor of Otology and Laryngology, College of Physicians and Surgeons, Department of Medicine, University of Illinois, etc., etc. Large octavo, 906 pp.; illustrated with 471 engravings and 16 plates. Published by Lea and Febiger, Philadelphia and New York, 1908.

Among all the larger treatises in otology and laryngology by American authors, we have no hesitation in giving this work of Ballenger first place. The experienced reviewer is often impressed with the lack of originality, subdivision of subject matter, sameness of illustration, and the colorless tone of the text. In all of these essentials, Ballenger's work is an epoch-maker, for it is teeming with the personality of the author, and with new and original ideas. It is profuse in unusually clear and well produced illustrations and the purpose of the cuts and drawings seems to be more than a mere picture-presentation of the text, for in many instances the author successfully carries out the plan of illustrating the various steps of operative technique in detail, so that but little text is necessary to follow the technique. This is essentially a working-guide to the surgery of otology and laryngology, and it is thoroughly up-to-date and includes all of the important advances made in these specialties. We predict that this volume will create more favorable comment than any treatise on otology and laryngology that has been published for many years.

Practical Medical Series, No. III.

This volume of the Practical Medical Series is of special interest to our readers, as it includes the field of diseases of the ear, nose, and throat. The section on diseases of the nose and throat seems to be rather more complete than that on the ear.

There is much of value contained in this volume, but it is our opinion that a year-book should reflect the progress of our specialties in a rather more complete manner than is undertaken in this volume.

Practically speaking, the section on otology has omitted even mention of a number of our most valuable contributions to this field during the year 1908. Of course, it is not to be expected that every paper of importance should be referred to in such a limited space. We trust the publishers and editors may find it possible, in forthcoming volumes, to extend the scope of this excellent work, by increasing the number of pages and permitting of a larger number of references to the progress and original papers which are published in our field.

Tuberculosis of the Nose and Throat.

By LORENZO B. LOCKARD, M. D., Laryngologist and rhinologist to the Jewish Consumptives Relief Society Sanatorium; The Y. M. C. A. Health Farm, and the Evangelical Lutheran Sanatorium, etc., etc., 504 pages; with eighty-five illustrations, sixty-four of them in colors. Price, cloth, $5.00. Publishers, C. V. Mosby Medical Book & Publishing Co., St. Louis, Mo., 1909.

This is the first larger treatise essayed on Tuberculosis of the Nose and Throat in this country, and indicates the importance with which this work on our specialties is now considered. The long experience of the author in a section of the country which has for many years been the Mecca sought by patients for the relief of tuberculosis, justifies his recognition as an authority in this work. This treatise is a classic, replete with much valuable information to the laryngologist and general practitioner alike, and contains carefully detailed descriptions of the various phases and stages of tuberculosis, as it occurs in the upper respiratory tracts.

The illustrations are, with but few exceptions, original, and accurately reproduced in colors; much credit is due the publisher for the excellent typography of the book; it is a valuable reference volume of this important subject.

Ueber fremde Korpen, Wurmer und Insekten im Menschlichen Ohr, und ihre Behandlung, von den Aeltesten Zeiten bis Heute (Foreign Bodies, Worms and Insects in the Human Ear, and their Treatment from the Earliest Times to the Present).

By DIMITRIOS STYL. DIMITRIADIS, of the University of Athens. Octavo, 248 pages, with 47 illustrations in the text and 6 plates showing ancient instruments for otological surgery. Publisher, P. D. Sakellarios, Athens, 1909.

In this rather unusual and interesting monograph the author has collected data concerning the occurrence of foreign bodies in the human ear, from the earliest period of Egypt, India, Greece, and Rome, and from Hippocrates throughout the centuries and including our own period of activity in this department of otology.

The historical interest of this subject is greatly enhanced by a series of plates and illustrations of the instruments and devices used by the ancients for the extraction of foreign bodies from the ear.

There are a number of interesting cases cited from the recent literature, but the subject and bibliography of animate foreign bodies in the ear, is somewhat incomplete.

Especial interest attaches to this volume, as the author is a Greek and familiar with many of the instruments and apparatus found in his section of the world in the days before otology was developed into a definite science.